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AD-724 500

PARACHUTE TECHNOLOGY

Volume I of II Volumes

A DDC BIBLIOGRAPHY

March 1954 - September 1970

DDC-TAS-70-87-I

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Volume I of II Volumes

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May 1971

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| 13. ABSTRACT The references in this bibliography are sorted into seven sections. Section I pertains to the testing or the results of testing of parachutes as a whole configuration; Section II to the theoretical and empirical studies of parachute aerodynamics; Section III to the materials involved in parachute systems; Section IV to the release mechanisms; Section V to parachute jumping and packs; Section VI to air drop operations; and Section VII to miscellaneous references. | | |

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FOREWORD

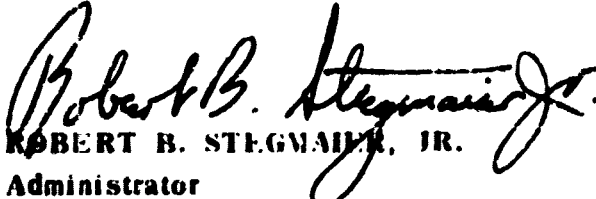
This bibliography is Volume I of a two-volume set on *Parachute Technology*. It contains 124 unclassified references with unlimited distribution that were processed into the Defense Documentation Center's data bank from January 1953 to March 1971. Entries are arranged by subject areas and sequenced by AD number within each subject area.

A LISTING OF IDENTIFIERS, or selected terms taken from the vernacular of the technical personnel doing the research, is provided with respective AD numbers on which the terms may be found. The computer-generated indexes are: Subject, Title, Personal Author, and AD Numeric.

Volume II, AD-515 800, is confidential.

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Administrator
Defense Documentation Center

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For more information on Scheduled Bibliographies, call 202-0X4-7207 or write to the Defense Documentation Center, ATTN: DDC-TAS.

- BASE FLOW
- AIRCRAFT LANDINGS
- ATMOSPHERE TURBULENCE
- LANDING FIELDS AND RUNWAYS
- GLIDER AIRCRAFT AND SAILPLANES
- DESERT TEST OF MILITARY AIRCRAFT

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| PARTIAL LIST OF <i>SCHEDULED BIBS</i>(Back cover) | |

LISTING OF IDENTIFIERS

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| <p>Aerodynamics decelerators AD-664 046, 670 984, 675 181, 675 182</p> <p>Alamo sling - shot systems AD-609 366</p> <p>Automatic uncouplers AD-696 225</p> <p>Ballistic hatch release AD-647 361</p> <p>Balloon parachutes AD-681 455</p> <p>Ballutes AD-625 785, 664 046, 666 021, 681 455, 670 984</p> <p>Barrels (Containers) AD-691 005</p> <p>Brake parachutes AD-621 777, 661 943, 661 954</p> <p>Canopy systems AD-667 401</p> <p>Cluster parachutes AD-690 809</p> <p>Concave bodies AD-693 355</p> <p>Decelerators AD-696 644</p> <p>Detachable pull loose parachute packs AD-683 066</p> <p>Drag Cones AD-667 401</p> | <p>Extraction parachutes AD-670 965, 670 984, 671 682, 672 079, 672 081, 672 087</p> <p>Gas cannons AD-695 086</p> <p>Gun launched projectiles AD-666 746</p> <p>Halo parachutes AD-639 342</p> <p>High altitude research program AD-666 746</p> <p>Lapes platforms AD-691 436</p> <p>Lift/drag ratio AD-667 401</p> <p>Lift parachutes AD-672 087</p> <p>Lift platforms AD-667 401</p> <p>Lifting of aerodynamic decelerators AD-669 665</p> <p>Low altitude extraction AD-691 436</p> <p>Mach number AD-606 569</p> <p>Main parachutes AD-693 466</p> <p>Nomex yarns AD-606 569, 670 180</p> |
|---|--|

LISTING OF IDENTIFIERS (Cont'd)

| | |
|--|--|
| Parachute canopies AD-669 665, 686 144, 693 355, 693 429, 693 466, 693 467, 695 086, 696 225 | Pilot parachutes AD-693 466 |
| Parachute canopy release AD-693 173 | Pogo AD-654 430 |
| Parachute deploying mechanisms AD-695 089 | Parachute retrorocket air drop AD-699 342 |
| Parachute release assy AD-683 211, 695 361 | Recovery parachutes AD-672 087 |
| Parachute suspension lines AD-688 584 | Reefing line cutter AD-647 361, 693 174, 695 360 |
| Parachute test projectiles AD-695 086 | Reefing lines AD-693 174 |
| Parachute uncoupling locks AD-686 504 | Rescue parachutes AD-694 355 |
| Parachute vents AD-687 307 | Retardation devices AD-666 021, 681 455 |
| Parafoil glider AD-600 861 | Rotating parachutes AD-670 984, 695 088 |
| Paragliders AD-646 578 | Skydivers AD-630 793, 631 019, 650 369 |
| Parasonic parachutes AD-675 182 | Thin spherical shells AD-658 672 |
| PBI fibers AD-670 180 | Transition flight AD-670 965 |
| Perlon AD-606 569 | Trolley air drop techniques AC-671 682 |
| Personnel parachutes AD-668 910 | Unsteady flow AD-693 355 |
| Persuasive communications AD-631 019 | Volunteers AD-631 049 |

I. PARACHUTES

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONCZ

AD-621 777

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
METHOD OF COMPENSATING THE AIRPLANE'S TURNING MOMENT
IN LANDING WITH A BRAKE PARACHUTE IN A STRONG SIDE
WIND, (U)

SEP 65 SP LIVSHITS, YA. A. IARETSKI, V.

Mo. 3, 1

REPT. NO. FTD-TT-65-506

MONITOR: TT, 65-64041

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF
RUSSIAN PATENT 163 079, PUB. 23 JAN 62, APPL. 751697/50-
23, 1P.

DESCRIPTORS: (DRA; PARACHUTES, AIRPLANES),
(LANDING AIDS, AIRPLANES), AIRCRAFT LANDINGS,
BRAKES, PATENTS, USSR (U)

THE OBJECT OF THE INVENTION IS A METHOD FOR
COMPENSATING THE TURNING MOMENT OF AN AIRPLANE ON
LANDING WITH A BRAKE PARACHUTE UNDER CONDITIONS OF A
STRONG SIDE WIND WHICH HAS THE DISTINGUISHING FEATURE
THAT FOR THE PURPOSE OF ASSURING A SAFE RUN OF THE
AIRPLANE ONE RELEASES AFTER THE BASIC BRAKE PARACHUTE
ONE OF TWO SUPPLEMENTARY STABILIZING PARACHUTES, AS
DEPENDS ON THE DIRECTION OF THE SIDE WIND, LOCATED ON
THE WINGS SYMMETRICALLY AT THE GREATEST DISTANCE FROM
THE CENTER OF GRAVITY OF THE AIRPLANE. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 140NC6

AD-625 785 14/2 4/2
GOODYEAR AEROSPACE CORP AKRON OHIO
DEVELOPMENT OF BALLUTE FOR RETARDATION OF ARCAS
ROCKETSONDES.

(U)

DESCRIPTIVE NOTE: FINAL REPT. MAY 64-DEC 65.
DEC 65 13SP GRAMAM, J. J., JR.
REPT. NO. GEN-12317
CONTRACT: AF19(628)-4194
PROJ: AF-6682
TASK: 668206
MONITOR: AFCHL 65-877

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (METEROLOGICAL INSTRUMENTS, PARACHUTE
DESCENTS), (PARACHUTES, METEROLOGICAL
INSTRUMENTS), (BALLOONS, PARACHUTE DESCENTS),
DECELERATION, ATMOSPHERIC SOUNDING, SOUNDING
ROCKETS, PARACHUTE FABRICS, POLYESTER PLASTICS,
POLYAMIDE PLASTICS, DROP TESTING, SYSTEMS
ENGINEERING, FLIGHT TESTING, RADIOSONDES,
STABILIZATION
IDENTIFIERS: BALLUTES

(U)

(U)

A BALLUTE(A) RETARDATION SYSTEM FOR ARCAS
ROCKETLAUNCHED METEOROLOGICAL INSTRUMENTS WAS
INVESTIGATED. VARIOUS BALLUTE CONFIGURATIONS WERE
FABRICATED, TESTED, AND EVALUATED IN FOUR STAGES:
AIROCK DROP TESTS; LOW-ALTITUDE HELICOPTER DROP
TESTS; HIGH-ALTITUDE BALLOONBURNE DROP TESTS; AND
ROCKET-LAUNCHED FLIGHT TESTS AT CAPE KENNEDY.
THE PROGRAM CULMINATED IN THREE SUCCESSFUL ROCKET-
LAUNCHED FLIGHTS OF THE FINAL CONFIGURATION WHICH,
BECAUSE OF THE HIGH STABILITY OF THE SYSTEM, YIELDED
TELEMETERED TEMPERATURE DATA OF UNPRECEDENTED
QUALITY. THE BALLUTE SYSTEM THAT MEETS THE DESIGN
GOALS OF RELIABILITY, STABILITY, DESCENT RATE, AND
COST WILL BE MADE OF FRACTIONAL MIL PLASTIC FILM,
WILL BE ABOUT 16-1/2 FT IN DIAMETER, AND WILL WEIGH
ABOUT TWO POUNDS. FURTHER DEVELOPMENT AND SYSTEM
QUALIFICATION TESTING ARE RECOMMENDED PRIOR TO
INCORPORATION OF THE BALLUTE INTO THE OPERATIONAL
SOUNDING SYSTEM. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZUNC2

AD-626 505 1976
NAVAL AIRCRAFT TORPEDO UNIT GUNSET POINT R 1
TORPEDO STABILIZER MARK 31 MOD 0 DEVELOPMENT
PHASE. (U)

DESCRIPTIVE NOTE: FINAL REPT.;
JAN 66 37P FERRIER, A. R. ;
REPT. NO. NAVAIRTORPU-TM-189,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (AIRCRAFT TORPEDOES, STABILIZATION
SYSTEMS), HELICOPTERS, TORPEDO LAUNCHERS, TORPEDO
TRAJECTORIES, DRAG PARACHUTES, TORPEDOES (U)

THIS FINAL REPORT DESCRIBES THE DEVELOPMENT OF THE
PARACHUTE-TYPE TORPEDO STABILIZER MARK 31 MOD
0 CURRENTLY USED AS A TORPEDO MARK 46
HELICOPTER LAUNCHING ACCESSORY. THE STABILIZER
INCORPORATES A NOVEL RELEASE MECHANISM WHICH HAS
PROVEN TO BE A HIGHLY RELIABLE PRINCIPLE OF
OPERATION. CALCULATED AND EXPERIMENTAL DATA IS
PRESENTED TO VALIDATE THE DESIGN CONCEPT AND TO
PROVIDE A BASIS FOR AN IMPROVED MODEL DEVELOPMENT
PROGRAM. RECOMMENDATIONS ARE MADE FOR ITS USE WITH
TORPEDOES MARK 44 AND 46 MOD 1 AT EXTENDED
LAUNCHING CONDITIONS. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZCNC2

AD-643 704 1/3
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
DRAG PARACHUTE, (U)
SEP 66 SP KADYSHEV, I. L. IKHAKHILEV, S.
D. ANDRIYASHENKO, I. S. :
REPT. NO. FTL-TT-66-105

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF
PATENT (USSR) 171 275, APPL. 702105/40-23, 16 APR
59.

DESCRIPTORS: (DRAG PARACHUTES, ACTUATORS),
PATENTS, USSR, RELIABILITY, SPRINGS, SAFETY (U)

THE OBJECT OF THE INVENTION IS A DRAG PARACHUTE.
TO INCREASE THE RELIABILITY OF THE PARACHUTE AND
JUMP SAFETY, IT IS MADE IN THE FORM OF A SPHERICAL
SPRING MECHANISM WITH THE UPPER PART COVERED BY A
DENSE FABRIC AND THE LOWER PART COVERED WITH A MESH
AND EQUIPPED WITH AN EXTERNAL CONICAL SPRING.
(AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONCZ

AD-661 743 1/2
ADVISORY GROUP FOR AERONAUTICAL RESEARCH AND DEVELOPMENT
PARIS (FRANCE)
ETUDE DE L'EMPLOI DU PARACHUTE-FREIN A L'ATTERRISSAGE
(STUDY OF THE USE OF THE BRAKE PARACHUTE IN AIRCRAFT
LANDING), (U)
OCT 58 26P GREMONT, J. ;
REPT. NO. AGARD-229

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: NATO FURNISHED. TEXT IN FRENCH.
PREPARED FOR PRESENTATION AT THE MEETING OF THE
WORKING GROUP ON 'SLOWERS AND MOCK-UP STUDIES'
(14TH), HELD 20-21 OCTOBER 1958 AT COPENHAGEN,
DENMARK.

DESCRIPTORS: (AIRCRAFT LANDINGS, DRAG
PARACHUTES), BRAKING (U)

THE INCREASE IN WEIGHT AND LANDING SPEEDS OF
AIRCRAFT HAS FOR SOME YEARS BEEN SUCH AS TO MAKE THE
BRAKING OF AIRCRAFT AN INCREASINGLY DIFFICULT PROBLEM
TO SOLVE. ALTHOUGH NUMEROUS INVESTIGATIONS HAVE
BEEN MADE AND SOME NEW SOLUTIONS HAVE BEEN TRIED OUT,
FEW OF THESE HAVE BEEN ADOPTED IN PRACTICE. ONE OF
THESE SOLUTIONS - THE BRAKE PARACHUTE - IS NOW WIDELY
USED. THE REPORT REVIEWS A NUMBER OF FACTS ABOUT
THIS METHOD OF BRAKING, AND IS DIVIDED INTO THREE
PARTS. THE FIRST PART DISCUSSES THE PROBLEM
EXPERIMENTALLY, THE SECOND DEVELOPS THE THEORETICAL
ASPECTS AND THE THIRD CONTAINS OBSERVATIONS ON THE
VARIOUS RESULTS OF ITS USE IN SERVICE CONDITIONS.
(AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-661 954 1/2
ADVISORY GROUP FOR AERONAUTICAL RESEARCH AND DEVELOPMENT
PARIS (FRANCE)
GROUND DECELERATION AND STOPPING OF LARGE AIRCRAFT.

(U)

OCT 58 54P ZALOVCIK, JOHN A. ;
REPT. NO. AGARD-231

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: NATO FURNISHED. PRESENTED AT THE
MEETING OF THE FLIGHT TEST PANEL (13TH), 20-25
OCT, 1958, COPENHAGEN, DENMARK.

DESCRIPTORS: (AIRCRAFT, BRAKING),
DECELERATION, DRAG, DRAG PARACHUTES, THRUST
REVERSE, FRICTION, LOADING(MECHANICS),
HANDLING

(U)

THE EFFECT OF VARIOUS FACTORS ON THE GROUND
DECELERATION AND STOPPING DISTANCE OF AIRCRAFT IS
DISCUSSED. SOURCES OF DECELERATION SUCH AS WHEEL
BRAKING, AIRPLANE DRAG, AERODYNAMIC BRAKES,
PARACHUTES, REVERSED TURBOJET THRUST, AND REVERSED
THRUST OF TURBOPROPELLER ENGINES ARE CONSIDERED.
THE EFFECT OF TIRE FRICTION, WHEEL LOAD, AND BRAKE
CAPACITY ON WHEEL BRAKING AND THE EFFECT ON STOPPING
DISTANCE OF AIRPLANE HANDLING TECHNIQUES THAT INVOLVE
THE USE OF ELEVATORS, FLAPS, SPOILERS, AND NOSE-HIGH
ATTITUDE ANGLES ARE COVERED IN SOME DETAIL. AN
APPENDIX INCLUDES A MATHEMATICAL ANALYSIS OF SOME
OF THE FACTORS AFFECTING DECELERATION AND STOPPING
DISTANCE. (AUTHOR)

(U)

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ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 7404C2

AD-664 046 1/3 5/2
TECHNOLOGY INC DAYTON OHIO
COMPUTERIZED DATA CATALOG AND RETRIEVAL SYSTEM FOR
DEPLOYABLE AERODYNAMIC DECELERATORS. (U)
DESCRIPTIVE NOTE: FINAL REPT, 15 DEC 66-15 JUN 67,
NOV 67 45P HOGAN, THOMAS J. , JR.;
SCHAUER, JOHN J. ;
CONTRACT: F33615-67-C-1232
PROJ: AF-6065
TASK: 606502
MONITOR: AFFDL TR-67-115

UNCLASSIFIED REPORT

DESCRIPTORS: (DECELERATION, PARACHUTES),
(DATA STORAGE SYSTEMS, DECELERATION),
(INFORMATION RETRIEVAL, DECELERATION), TEST
METHODS, BALLOONS, ROTORCHUTES, DATA PROCESSING
SYSTEMS, DROP TESTING, CODING, ROCKET-PROPELLED
SLEDS, COMPUTER PROGRAMS, DEPLOYMENT (U)
IDENTIFIERS: BALLUTES, AERODYNAMIC
DECELERATORS (U)

IN THE DEVELOPMENT OF A COMPUTERIZED DATA CATALOG
AND DATA RETRIEVAL SYSTEM FOR DEPLOYABLE AERODYNAMIC
DECELERATORS, THE RESULTS WERE TWOFOLD: (1) A
LIST OF PARAMETERS WHICH COMPLETELY DEFINE THE
INFORMATION PERTINENT TO THESE DECELERATORS; AND
(2) A DATA BASE (THE STRUCTURE TO ARRANGE THE
DATA ELEMENTS MAKING UP A UNIT OF INFORMATION) AND
THE COMPUTER PROGRAM TO MANIPULATE THE DATA BASE.
THE COMBINATION OF THESE RESULTS CONSTITUTES A
SYSTEM TO STORE AND RETRIEVE BY COMPUTER TECHNIQUES
ALL DATA RELATED TO DEPLOYABLE AERODYNAMIC
DECELERATORS. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZCNC2

AD-666 021 4/2
DAYTON OHIO RESEARCH INST
THE BALLUTE: A RETARDATION DEVICE AND WIND SENSOR,

(U)

NOV 67 30P LUERS, JAMES K. I
REPT. NO. SCIENTIFIC-3, UDRI-TN-67-144
CONTRACT: AF 19(62-)-4796
PROJ: AF-6632
TASK: 666204
MONITOR: AFCL 67-0659

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO SCIENTIFIC REPT. NO. 1,
AD-657 811.

DESCRIPTORS: METEOROLOGICAL INSTRUMENTS,
PARACHUTES, SOUNDING ROCKETS, STABILIZATION
SYSTEMS, MEASUREMENT, ANALYSIS, TEMPERATURE,
TEST METHODS, ATMOSPHERIC SOUNDING, SENSORS,
WIND

(U)

IDENTIFIERS: BALLUTES, RETARDATION SYSTEMS

(U)

EXPERIMENTAL TESTS HAVE BEEN MADE WITH VARIOUS
CONFIGURATIONS OF THE BALLUTE IN ORDER TO DEVELOP A
STABLE RETARDATION DEVICE FOR METEOROLOGICAL
ROCKETSONDES. THIS REPORT DISCUSSES THE REDUCTION
AND ANALYSIS OF THESE TESTS. SEVERAL OF THE
BALLUTE CONFIGURATIONS ARE SHOWN TO SATISFY THE
PROJECT GOAL OF PROVIDING THE REQUIRED STABILITY AS
WELL AS A SUFFICIENTLY SLOW FALL VELOCITY TO
ACCURATELY MEASURE WINDS AND TEMPERATURE.
(AUTHOR)

(U)

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JDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-670 984 1/3 15/7
GOODYEAR AEROSPACE CORP AKRON OHIO
PRELIMINARY INVESTIGATION OF BALLUTE-FLEXIBLE ROTOR
CONCEPT FOR LOW-ALTITUDE CARGO AIRDROP. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
AUG 66 116P MANSFIELD, O. L. ;
REPT. NO. GER-12970
CONTRACT: DA-19-129-AMC-657(N)
PRQJ: DA-1M1214010195
MONITOR: USA-NLABS TR-68-70-AD

UNCLASSIFIED REPORT

DESCRIPTORS: (• ROTORCHUTES, • ROTARY WINGS),
(• CARGO PARACHUTES, • AIR DROP OPERATIONS), LOW
ALTITUDE, FLEXIBLE STRUCTURES, CARGO, BALLOONS,
TACTICAL AIR SUPPORT, ARMY OPERATIONS, INFLATABLE
STRUCTURES, DESIGN, DESCENT, IMPACT,
RELIABILITY, FLIGHT TESTING (U)
IDENTIFIERS: BALLUTES, AERODYNAMIC DECELERATORS,
EXTRACTION PARACHUTES (U)

CONCEPTUAL DESIGN FOR AN AIRDROP SYSTEM FROM A 500
FT. ALTITUDE FOR PAYLOADS FROM 2,000 TO 35,000 LB
USING A SPINNING BALLUTE FOR CARGO EXTRACTION AND
INITIAL ROTOR SPIN-UP AND AN AUTOROTATING INFLATABLE
FLEXIBLE ROTOR FOR TERMINAL DESCENT ARE REPORTED.
BALLUTE WEIGHTS AND ROTOR SYSTEM SIZE AND WEIGHTS
ARE EVALUATED FOR SYSTEMS WITH AND WITHOUT A FLARE
MANEUVER TO MEET ACCEPTABLE IMPACT VELOCITY
CONDITIONS. OPERATIONAL REQUIREMENTS AND A
PRELIMINARY ESTIMATE OF RELIABILITY ARE PRESENTED.
DESIGN AND FREE-FLIGHT TESTING OF A 5-FT. DIAMETER
MODEL INFLATABLE ROTOR ARE DESCRIBED. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-681 455 4/2 1/3
GOODYEAR AEROSPACE CORP AKRON OHIO
BALLUTE DEVELOPMENT FOR LOKI-DART AND ARCAS
ROCKETSONDES.
DESCRIPTIVE NOTE: FINAL REPT. FEB 66-AUG 68,
NOV 68 51P GRAHAM, JOHN J. , JR
REPT. NO. GER-14010
CONTRACT: AF 19(62b)-5851
PROJ: AF-6682
TASK: 668203
MONITOR: AFCRL 68-0622

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: (SOUNDING ROCKETS, PARACHUTES),
DECELERATION, RADIOSONDES, STABILIZATION,
ATMOSPHERIC SOUNDING, WIND, ATMOSPHERIC
TEMPERATURE, MANUFACTURING METHODS, COSTS, FLIGHT
TESTING, METEOROLOGICAL BALLOONS
IDENTIFIERS: RETARDATION DEVICES, BALLOON
PARACHUTES, ARCAS, LOKI-DART SOUNDING ROCKETS,
PAN-88 SOUNDING ROCKETS, BALLUTES

(U)

(U)

GOODYEAR AEROSPACE CORPORATION COMPLETED A
PROGRAM TO DEVELOP A STABILIZING DECELERATOR FOR THE
ARCAS AND LOKI-DART METEOROLOGICAL
ROCKETSONDES. DURING THE PROGRAM OF CYCLIC
MODIFICATION, TEST, AND EVALUATION, 53 DEVELOPMENT
UNITS WERE FLIGHT TESTED AT THE AIR FORCE
EASTERN TEST RANGE. THE DESIGN PERFORMANCE
GOALS WERE REACHED FOR BOTH SYSTEMS. FIFTY-FIVE
PREPRODUCTION UNITS OF THE LOKI-DART BALLUTE
WERE FABRICATED FOR FURTHER EVALUATION BY AIR
FORCE CAMBRIDGE RESEARCH LABORATORIES. AS
A RESULT OF THIS PROGRAM THE LOKI-DART BALLUTE
(PARACHUTE, METEOROLOGICAL A/B2BU-5) WAS
INCORPORATED IN THE STANDARDIZED PAN-88
METEOROLOGICAL ROCKETSONDE CURRENTLY IN
PRODUCTION. (AUTHOR)

(U)

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JDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-686 144 1/3

ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C

PARACHUTE:

(U)

MAR 69

7P

LOBANOVIN. A. ;

REPT. NO. FSTC-MT-23-1019-68

PROJ: FSTC-95J9033A0906, FSTC-92236262361

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF PATENT (USSR) 207 042, 8
DEC 67.

DESCRIPTORS: (PARACHUTES, PATENTS), DESIGN,
CONVOY, BRAKING, USSR

(U)

IDENTIFIERS: PARACHUTE CANOPIES, TRANSLATIONS

(U)

A PARACHUTE IS DESCRIBED WHICH CONSISTS OF A CANOPY
WITH A POLAR OPENING; CENTRAL SHROUD LINES WITH AN
ELASTIC LINK, A BRAKING PARACHUTE ATTACHED BY THE
ELASTIC LINK BY MEANS OF A CONNECTING PULL-LINE.
TO RETARD THE FILLING AND OPENING OF THE CANOPY OF
THE BASIC PARACHUTE THE LOWER EDGE OF THE CANOPY OF
THE BASIC PARACHUTE IS EQUIPPED WITH A DRAW-IN
LACING, WHICH BREAKS UPON THE PULLING OUT OF THE
CONNECTING PULL-LINE, THIS LINE BEING ATTACHED TO THE
SHROUD OF THE PULL-OUT PARACHUTE BY MEANS OF AN
INTERMEDIARY LINK WHICH BREAKS IN THE AIR AFTER FULL
STRETCH-OUT OF THE ELASTIC LINK OF THE CENTRAL SHROUD
LINES. (AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO: /ZONC2

AD-693 42Y 1/3
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C
A PARACHUTE CANOPY WITH POCKETS. (U)
SEP 69 6P
REPT: NO. FSTC-HT-23-391-69
PROJ: FSTC-02RD500

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF PATENT (USSR) 193 941,
22 MAY 67.

DESCRIPTORS: (PARACHUTES, DESIGN), STRUCTURAL (U)
PARTS, CONSTRUCTION, SAFETY, PATENTS, USSR (U)
IDENTIFIERS: PARACHUTE CANOPIES, TRANSLATIONS (U)

THE DOCUMENT DESCRIBES A PARACHUTE WITH POCKETS ON
THE CANOPY AND HOLES BENEATH THE POCKETS DESIGNED TO
ADMIT AIR AT THE HOLES TO ASSURE THAT THE CANOPY WILL
OPEN FROM THE CENTRAL PORTION OUT. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-693 467 1/3
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C
PARACHUTE CANOPY, (U)
SEP 69 6P OSMOLOVSKII, I. V. ;
REPT. NO. FSTC-HT-23-408-69
PROJ: FSTC-D423100

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF PATENT (USSR) 205 611,
19 JAN 68.

DESCRIPTORS: (PARACHUTES, DESIGN), AUTOMATIC,
OPERATION, LOADING(MECHANICS), CORDAGE,
CALIBRATION, PATENTS, USSR (U)
IDENTIFIERS: PARACHUTE CANOPIES, TRANSLATIONS (U)

THE INVENTION DESCRIBES AN IMPROVED PARACHUTE
CANOPY, EQUIPPED WITH A DEVICE WHICH AUTOMATICALLY
INCREASES THE SIZE OF THE CANOPY VENT UNDER A
SPECIFIED CANOPY LOADING CONDITION. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-693 429 1/3
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C
A PARACHUTE CANOPY WITH POCKETS. (U)
SEP 69 6P
REPT. NO. FSTC-HT-23-391-69
PROJ: FSTC-02R0500

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF PATENT (USSR) 173 941,
22 MAY 67.

DESCRIPTORS: (PARACHUTES, DESIGN), STRUCTURAL (U)
PARTS, CONSTRUCTION, SAFETY, PATENTS, USSR (U)
IDENTIFIERS: PARACHUTE CANOPIES, TRANSLATIONS (U)

THE DOCUMENT DESCRIBES A PARACHUTE WITH POCKETS ON
THE CANOPY AND HOLES BENEATH THE POCKETS DESIGNED TO
ADMIT AIR AT THE HOLES TO ASSURE THAT THE CANOPY WILL
OPEN FROM THE CENTRAL PORTION OUT. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC4

AD-693 467 173
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C
PARACHUTE CANOPY, (U)
SEP 69 6P OSMOLOVSKI, I. V. ;
REPT. NO. FSTC-HT-23-408-69
PROJ: FSTC-0423100

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF PATENT (USSR) 205 611,
19 JAN 68.

DESCRIPTORS: (PARACHUTES, DESIGN), AUTOMATIC,
OPERATION, LOADING(MECHANICS), CORDAGE,
CALIBRATION, PATENTS, USSR (U)
IDENTIFIERS: PARACHUTE CANOPIES, TRANSLATIONS (U)

THE INVENTION DESCRIBES AN IMPROVED PARACHUTE
CANOPY, EQUIPPED WITH A DEVICE WHICH AUTOMATICALLY
INCREASES THE SIZE OF THE CANOPY VENT UNDER A
SPECIFIED CANOPY LOADING CONDITION. (AUTHOR) (U)

UNCLASSIFIED

JOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-695 088 1/3
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C
ROTARY PARACHUTE. (U)
SEP 69 7P
REPT. NO. FSTC-HT-23-402-69
PROJ: FSTC-0423100

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF PATENT (USSR) 205 609.
19 JAN 68.

DESCRIPTORS: (CARGO PARACHUTES, USSR), PATENTS, (U)
CONFIGURATION, ROTORCHUTES (U)
IDENTIFIERS: TRANSLATIONS (U)

THREE ROTATING PARACHUTES ARE DESCRIBED. THEY
CONSIST OF CONNECTED TRIANGLES WITH SHROUDS ON TWO
SIDES OF THE TRIANGLES ONLY. AIR FLOW UNDER THE
THIRD SIDE CAUSES THE PARACHUTES TO ROTATE.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONCZ

AD-701 004 1/3

PIIONEER PARACHUTE CO INC MANCHESTER CONN
PROTOTYPE CLUSTER-PARACHUTE RECOVERY SYSTEM FOR A
50,000-LB. UNIT LOAD. VOLUME 1. DESIGN
STUDY. (U)

DESCRIPTIVE NOTE: FINAL REPT., MAY 68-JAN 69,
JAN 69 211P TONI, ROYCE A. IMPELLER,
WOLFGANG R. IKNORR, MILAN M. WOOD, MARCIA C.

CONTRACT: DAAG17-68-C-0142
PROJ: DA-1-F-162203-D-195
MONITOR: USA-NLABS TR-69-92-AD

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-701 005.

DESCRIPTORS: (CARGO PARACHUTES, DESIGN), FLIGHT
TESTING, DROP TESTING, PARACHUTE FABRICS,
SUSPENSION DEVICES, DRAG,

PERFORMANCE (ENGINEERING), AIR DROP OPERATIONS (U)

IDENTIFIERS: G-11A PARACHUTES, CLUSTER
PARACHUTES (U)

THE REPORT COVERS A RESEARCH AND DEVELOPMENT
PROGRAM TO DESIGN AND FABRICATE A PROTOTYPE CARGO-
RECOVERY PARACHUTE ASSEMBLY FOR AIRDROPPING HEAVY
UNIT LOADS IN THE ORDER OF 50,000 LB. THE DESIGN
STUDY COVERS THE TRADE-OFF ANALYSIS AND COST
EFFECTIVENESS ASPECTS FOR A COMPLETE PARACHUTE
ASSEMBLY. FROM THESE STUDIES, A DESIGN ANALYSIS
AND COMPLETE DETAILED DESIGN WERE MADE BASED ON THE
SPECIFIED PERFORMANCE AND DESIGN REQUIREMENTS. USE
OF DATA REDUCTION ON FULL-SCALE CARGO DROPS WITH G-
11A PARACHUTES WITH VENT-PULL DOWN CONFIGURATION,
SCALE MODEL WIND TUNNEL TESTS AND PARAMETRIC STUDIES
DETERMINED THAT IT IS FEASIBLE TO USE A CARGO
PARACHUTE OF 135 FT. DIAM. WITH A VENT-PULL DOWN IN A
CLUSTER OF SIX TO RECOVER A LOAD UNIT OF 50,000 LB.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-701 005 1/3

PIONEER PARACHUTE CO INC MANCHESTER CONN
PROTOTYPE CLUSTER-PARACHUTE RECOVERY SYSTEM FOR A
50,000-LB UNIT LOAD. VOLUME II. DIRECT DESIGN
ASPECTS. (U)

DESCRIPTIVE NOTE: FINAL REPT. MAY 68-JAN 69,
JAN 69 127P TONI, ROYCE A. ; KNOR, MILAN
M. I

CONTRACT: DAAG17-60-C-0142

PROJ: DA-1-F-162203-D-195

MONITOR: USA-NLABS TR-69-83-AD

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME I, AD-701 004.

DESCRIPTORS: (CARGO PARACHUTES, DESIGN),
PARACHUTE FABRICS, SUSPENSION DEVICES,
LOADING(MECHANICS), FORCE(MECHANICS),
MATHEMATICAL ANALYSIS, CONFIGURATION, STRESSES,
PERFORMANCE(ENGINEERING), AIR DROP
OPERATIONS (U)

IDENTIFIERS: G-11A PARACHUTES, CLUSTER
PARACHUTES (U)

THE REPORT COVERS THE DIRECT DESIGN ASPECTS OF THE
SELECTED PROTOTYPE CARGO RECOVERY ASSEMBLY FOR
AIRDROPPING HEAVY UNIT LOADS IN THE ORDER OF 50,000
POUNDS. THE DETAILED DESIGN OF THE COMPONENTS IS
COVERED AS WELL AS STRESS ANALYSIS TO DETERMINE THE
MARGINS OF SAFETY FOR THE MATERIALS SELECTED.
MATERIAL LISTS AND WEIGHTS FOR THE COMPONENTS ARE
PROVIDED. LABORATORY TESTING OF INDIVIDUAL
COMPONENTS AND STRENGTH EFFICIENCY OF STITCH PATTERNS
ARE SHOWN. (AUTHOR) (U)

II. AERODYNAMICS

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDNCZ

AD-600 864

MINNESOTA UNIV MINNEAPOLIS

AERODYNAMIC CHARACTERISTICS OF THE PARAFOL GLIDER
AND OTHER GLIDING PARACHUTES. (U)

APR 64 58P

HEINRICH, H. G. NIETZ, THOMAS

LIPPA, HARVEY I

CONTRACT: AF33 416 8310

PROJ: 6065

TASK: 606503

MONITOR: RTD TOR63 4022

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (PARACHUTES, AERODYNAMIC CHARACTERISTICS),
STABILITY, ANGLE OF ATTACK, LIFT, DRAG, MODEL TESTS,
AERODYNAMIC CHARACTERISTICS, DESIGN (U)
IDENTIFIERS: PARAFOL GLIDER (U)

A NEWLY CONCEIVED GLIDING PARACHUTE, CALLED THE
PARAFOL GLIDER, AND SEVERAL EXISTING GLIDE
PARACHUTES HAVE BEEN EXAMINED WITH REGARD TO THEIR
GENERAL STABILITY, RESULTING STABLE ANGLE OF ATTACK,
AND LIFT TO DRAG RATIO. THE PARAFOL GLIDER
ASSUMED STABLE ANGLES OF ATTACK UP TO 50 DEGREES
AGAINST THE VERTICAL WHICH REPRESENTS A LIFT TO DRAG
RATIO OF APPROXIMATELY 1.2. THE INVESTIGATED
EXISTING PARACHUTES HAD LIFT TO DRAG RATIOS OF LESS
THAN UNITY. THE TANGENTIAL FORCE COEFFICIENT OF
THE PARAFOL GLIDER AMOUNTS TO APPROXIMATELY 1.5 AT
THE POSITION OF THE STABLE ANGLE OF ATTACK. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC4

AD505 671

MINNESOTA UNIV MINNEAPOLIS INST OF TECH

THEORETICAL PARACHUTE INVESTIGATIONS.

(U)

DESCRIPTIVE NOTE: PROGRESS REPT. NO. 23, 1 SEP-30 NOV 62,

NOV 62 64P HEINRICH, H. G. PRIABOK, T.

ABRAHAM, S. K. HAAK, E. L. INICUM, R. K. ;

CONTRACT: AF33 616 8380

PROJ: 6065

TASK: 60252

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-605 144

DESCRIPTORS: (*PARACHUTES, AERODYNAMIC CHARACTERISTICS), CARGO PARACHUTES, RIBBON PARACHUTES, CONFIGURATION, DECELERATION, WAKE, DYNAMICS, WIND TUNNELS, PARACHUTE FABRICS, MODELS (SIMULATIONS), STABILITY, STATISTICAL ANALYSIS (U)

CONTENTS: INVESTIGATION OF WAKE EFFECTS ON THE BEHAVIOR OF PARACHUTES AND OTHER RETARDATION DEVICES BEHIND LARGE BODIES; INVESTIGATION OF BASIC STABILITY PARAMETERS OF CONVENTIONAL PARACHUTES; THEORETICAL STUDY OF SUPERSONIC PARACHUTE PHENOMENA; THEORETICAL ANALYSIS OF THE DYNAMICS OF THE OPENING PARACHUTE; STATISTICAL ANALYSIS OF EXTRACTION TIME, DEPLOYMENT TIME, OPENING TIME, AND DRAG COEFFICIENT FOR AERIAL DELIVERY PARACHUTES AND SYSTEMS; GLIDING AERODYNAMIC DECELERATOR; EFFECTIVE POROSITY STUDIES; STUDY OF FLOW PATTERNS OF AERODYNAMIC DECELERATORS BY MEANS OF THE SURFACE WAVE ANALOGY; STRESS ANALYSIS OF THE T-10 TROOP PARACHUTE; AERODYNAMIC CHARACTERISTICS OF THE PARACHUTE STABILIZED A-21 CARGO CONTAINER; AERODYNAMIC CHARACTERISTICS OF THE CROSS AND WAGON-WHEEL TYPE PARACHUTES; DETERMINATION OF MASS FLOW THROUGH PARACHUTES WITH INHERENT GEOMETRIC POROSITY.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONCZ

AD-607 036

COOK ELECTRIC CO MONTON GROVE ILL
STUDY OF PARACHUTE PERFORMANCE AND DESIGN PARAMETERS
FOR HIGH DYNAMIC PRESSURE OPERATION. (U)
DESCRIPTIVE NOTE: REPT. FOR 1 JUL 62-31 DEC 63.
MAY 64 141P PEDERSEN, P. E. I
CONTRACT: AF33 657 9192
PROJ: 6065
TASK: 606505
MONITOR: FDL , TUR64 66

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: LEGIBILITY OF THIS DOCUMENT IS IN PART
UNSATISFACTORY. REPRODUCTION HAS BEEN MADE FROM BEST
AVAILABLE COPY.

DESCRIPTORS: (PARACHUTES, PERFORMANCE (ENGINEERING),
DESIGN, AERODYNAMIC LOADING, AERODYNAMIC
CHARACTERISTICS, ROCKET PROPELLED SLEDS, TESTS, SHOCK
(MECHANICS), DRAG, STABILITY, TEMPERATURE, DECELERATION) (U)

PARACHUTE DESIGN AND PERFORMANCE DATA WERE OBTAINED
ON A SERIES OF 24 ROCKET-POWERED SLED TESTS.
PARACHUTE DEPLOYMENT VELOCITIES, RANGING BETWEEN
MACH 1.0 AND 1.5, WERE OBTAINED WITH THE TOMAHAWK
PARACHUTE TEST SLED OPERATING IN EITHER SINGLE STAGE
OR DOUBLE STAGE, PUSHER CONFIGURATION. PARACHUTE
TYPES THAT WERE INVESTIGATED INCLUDED HYPERFLO,
HEMISFLO, REEFED CONICAL RIBBON AND
SUPERSONIC GUIDE SURFACE DESIGNS. THE DATA
OBTAINED INCLUDED INFLATION CHARACTERISTICS, OPENING
SHOCK FACTORS, DRAG COEFFICIENTS, INFLATED AREAS,
STABILITY, CANOPY TEMPERATURES AND GENERAL STRUCTURAL
AND AERODYNAMIC DESIGN CONSIDERATIONS. FROM THIS
PARACHUTE DECELERATOR TEST PROGRAM, IT MAY BE
CONCLUDED THAT THE HYPERFLO TYPE PARACHUTE, BOTH
MESH AND RIBBON ROOF DESIGNS, AND THE HEMISFLO TYPE
PARACHUTE CAN BE FABRICATED TO WITHSTAND AND OPERATE
SUCCESSFULLY IN THE HIGH DYNAMIC PRESSURE REGION OF
3000 PSF. SUPERSONIC REEFED OPERATION AND DISREEF
TO FULL OPEN WAS ALSO DEMONSTRATED AS PRACTICAL WITH
A CONICAL RIBBON TYPE PARACHUTE DESIGN. THE
TEST VEHICLE SYSTEM INCLUDING ASSOCIATED DEPLOYMENT
AND RELEASE TECHNIQUES AND THE DATA ACQUISITION
SYSTEM ARE ALSO DISCUSSED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZCNCZ

AD-607 637

PHILCO NEWPORT BEACH CALIF AERONUTRONIC DIV
AERODYNAMIC CHARACTERISTICS OF THE HYPER-
ENVIRONMENTAL TEST SYSTEM DATA RECOVERY VEHICLE FOR
MACH NUMBERS 0.52 TO 0.96. (U)

DESCRIPTIVE NOTE: TECHNICAL OPERATING REPT.,

FEB 60 94P WARDEN, R. V. I

REPT. NO. AERONUTRONIC U-826

CONTRACT: AFU4 647 449

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COMPLIANCE WITH AFDM
EXHIBIT 58-1, SECTION 3.11.4. LEGIBILITY OF THIS
DOCUMENT IS IN PART UNSATISFACTORY. REPRODUCTION HAS BEEN
MADE FROM BEST AVAILABLE COPY.

DESCRIPTORS: (RECOVERY VEHICLES, STABILITY), TRANSONIC
FLIGHT, AERODYNAMIC CHARACTERISTICS, ENVIRONMENTAL
TESTS, MODEL TESTS, NOSE CONES, CONFIGURATION, PARACHUTE
JUMPING, WIND TUNNELS (U)

THE REPORT PRESENTS THE RESULTS OF A SERIES OF
TESTS IN CONVAIR'S HIGH-SPEED WIND TUNNEL TO
EVALUATE THE STABILITY OF THE METS 609A RECOVERY
VEHICLE IN THE TRANSONIC REGIME. THE TESTS WERE
RUN WITH TWO NOSE CONFIGURATIONS AT MACH NUMBERS
0.52, 0.61, 0.67, 0.82, AND 0.96. BOTH
CONFIGURATIONS WERE SUFFICIENTLY STABLE TO PERMIT
PARACHUTE DEPLOYMENT DOWN TO MACH 0.6.

(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZUNC2

AD-606 303

MINNESOTA UNIV MINNEAPOLIS

DRAG COEFFICIENTS OF SEVERAL BODIES OF REVOLUTION AT
TRANSONIC AND SUPERSONIC VELOCITY, (U)

SEP 64 54P HEINRICH, H. G. ; HESS, SHELDON

R. ; STUMBRIS, GUNAR;

CONTRACT: AF33 616 6310

PROJ: 6065

TASK: 606503

MONITOR: ASD , TDR63 663

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: JOINTLY SPONSORED BY THE QM RESEARCH
AND ENGINEERING COMMAND, DEPT. OF THE ARMY; AND
BUREAU OF AERONAUTICS AND BUREAU OF ORDNANCE,
DEPT. OF THE NAVY.

DESCRIPTORS: (*DRAG, BODIES OF REVOLUTION), (*BODIES OF
REVOLUTION, DECELERATION), TRANSONIC FLOW, SUPERSONIC
FLOW, ATMOSPHERE ENTRY, AERODYNAMIC LOADING, REENTRY
VEHICLES, DRAG PARACHUTES, WAKE, WIND TUNNELS (U)

THE DRAG COEFFICIENTS OF SEVERAL BODIES OF
REVOLUTION WHICH ARE SIGNIFICANT FOR THE PURPOSE OF
AERODYNAMIC DECELERATION WERE MEASURED IN THE
TRANSONIC FLOW REGIME AND AT SUPERSONIC SPEEDS OF
MACH NUMBERS 4 AND 5. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC4

AD-606 305

MINNESOTA UNIV MINNEAPOLIS

PRESSURE DISTRIBUTION MEASUREMENTS OF CONVENTIONAL
RIBBON PARACHUTES IN SUPERSONIC FLOW, (U)

SEP 64 36P HAAK, EUGENE L. INICCOM.

RONALD J. I

CONTRACT: AF93 616 8310

PROJ: 6065

TASK: 606503

MONITOR: ASD ,

TDR63 662

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: JOINTLY SPONSORED BY THE DEPT. OF
THE ARMY AND THE DEPT. OF THE NAVY. LEGIBILITY OF
THIS DOCUMENT IS IN PART UNSATISFACTORY. REPRODUCTION HAS
BEEN MADE FROM BEST AVAILABLE COPY.

DESCRIPTORS: (RIBBON PARACHUTES, AERODYNAMIC
CHARACTERISTICS), MODELS (SIMULATIONS), PARACHUTES,
PRESSURE, DISTRIBUTION, SUPERSONIC FLOW, TEST METHODS,
HIGH-SPEED PHOTOGRAPHY, WIND TUNNELS, EXPERIMENTAL
DATA. (U)

CONVENTIONALLY SHAPED RIBBON PARACHUTES DO NOT
FUNCTION SATISFACTORILY AS AERODYNAMIC DECELERATORS
IN SUPERSONIC FLOW. THEIR UNSTABLE BEHAVIOR IS
PARTICULARLY OBJECTIONABLE. TO DETERMINE THE CAUSE
OF THIS STRUCTURAL AND DYNAMIC INSTABILITY, A SERIES
OF PRESSURE DISTRIBUTION MEASUREMENTS WERE MADE ON
RIBBON PARACHUTES AT MACH NUMBERS OF 0.8, 1.08,
1.2, 3.0, AND 4.5. THE RESULTS OF MEASUREMENTS AND
ATTEMPTS TO INDICATE THE EFFECT OF SUSPENSION LINES
AND FOREBODIES ON THE PRESSURE DISTRIBUTION OF THE
PARACHUTE CANOPY ARE PRESENTED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-610 791

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
AEROHYDROMECHANIC THEORY OF WING IN A NONSTATIONARY
FLOW (SELECTED PARTS) (U)

JAN 65 17P NEKRASOV, A. I. ;
REPT. NO. FTU-TT-64-777
MONITOR: TT 65 61556

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF MONO.
TEORETICHESKAYA I PRIKLADNAYA MEKHANIKA, SBORNIK
STATEI, V. 2, MOSCOW, 1962, P. 100-101, 611-622.

DESCRIPTORS: (AERODYNAMIC CHARACTERISTICS, WINGS),
(PARACHUTES, LOADING (MECHANICS)), AIRFOILS,
NONEQUILIBRIUM FLOW, PARACHUTE DESCENTS, ARRESTING GEAR,
MATHEMATICAL MODELS, LIFT, USSR (U)

A FORMULA IS OBTAINED FOR THE POWER OF LIQUID
PRESSURE ON A PROFILE SITUATED IN NONSTATIONARY
MOTION. A MATHEMATICAL THEORY IS OFFERED OF AN
ARRANGEMENT, PROPOSED FOR REDUCING THE RATE OF
LANDING OF PARACHUTE LOADS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-631 777 1/3 1/1
DEUTSCHE FORSCHUNGSANSTALT FUER LUFT- UND RAUMFAHRT E. V.
BRUNSWICK (WEST GERMANY) INSTITUT FUER FLUGMECHANIK
PARACHUTE CANOPIES DURING INFLATION. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
SEP 65 137P MELZIG, P. O. ISCHMIDT, P. K.

CONTRACT: AF 61(052)-681,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (PARACHUTES, PRESSURE), AERODYNAMIC
CHARACTERISTICS, EXPERIMENTAL DATA, SURFACES,
PHOTOGRAPHIC ANALYSIS, TESTS, MATHEMATICAL MODELS,
CORRELATION TECHNIQUES (U)

AN EXPERIMENTAL INVESTIGATION AND CORRELATIVE
ANALYSIS WERE CONDUCTED TO DETERMINE THE PRESSURE
DISTRIBUTION OVER THE SURFACE OF PARACHUTE CANOPIES
DURING THE PERIOD OF INFLATION FOR THE INFINITE MASS
CASE AND TO CORRELATE PRESSURE COEFFICIENTS WITH
INFLATING CANOPY SHAPES. PARACHUTE CANOPY MODELS
OF CIRCULAR FLAT, 108 EXTENDED SKIRT,
RINGSLOT, AND RIBBON DESIGNS WERE TESTED UNDER
INFINITE MASS CONDITIONS IN A 9 X 12 FT LOW SPEED
WIND TUNNEL. EXTERNAL AND INTERNAL PRESSURE VALUES
WERE MEASURED AT VARIOUS LOCATIONS OVER THE SURFACE
OF THE MODEL CANOPIES THROUGHOUT THE PERIOD OF
INFLATION, AND GENERALIZED CANOPY PROFILE SHAPES WERE
OBTAINED BY MEANS OF PHOTOGRAPHIC ANALYSIS.
PRESSURE COEFFICIENTS DERIVED FOR THE STEADY STATE
(FULLY OPEN CANOPY) ARE QUITE COMPARABLE TO THE
RESULTS OF PREVIOUS MEASUREMENTS. PEAK PRESSURE
VALUES DURING THE UNSTEADY PERIOD OF INFLATION WERE
FOUND TO BE UP TO 5 TIMES AS GREAT AS STEADY STATE
VALUES. THE RELATIONSHIPS BETWEEN THE PRESSURE
DISTRIBUTION AND TIME FOR EACH OF THE CANOPY MODELS
DEPLOYED AT FREE-STREAM VELOCITIES BETWEEN 70 AND 160
FT/SEC ARE PRESENTED IN DETAIL AND CORRELATED WITH
CHANGING CANOPY SHAPE. A COMPLETE SHAPE ANALYSIS
IS MADE AND A MATHEMATICAL MODEL IS PROPOSED.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-635 185 4/2 22/2
TEXAS UNIV AUSTIN ATMOSPHERIC SCIENCE GROUP
DETERMINATION OF WINDS FROM METEOROLOGICAL
ROCKETSONDES. (U)
NOV 65 34P EDDY, ARON DOUCHON, C. E. ;
HAASE, F. M. ; HARAJAN, D. R. ;
REPT. NO. 2,
CONTRACT: DA-23-073-AMC-1564,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTES:

DESCRIPTORS: (METEOROLOGICAL INSTRUMENTS, SOUNDING
ROCKETS), (WIND, ATMOSPHERIC SOUNDING),
(SOUNDING ROCKETS, ATMOSPHERIC SOUNDING), WIND-
DIRECTION INDICATORS, RADIOSONDES, PARACHUTE
DESCENTS, EQUATIONS OF MOTION (U)
IDENTIFIERS: ARCAS (U)

THE EQUATIONS OF MOTION ARE DERIVED FOR AN OBJECT
FALLING UNDER THE INFLUENCE OF GRAVITY AND
AERODYNAMIC DRAG. THESE EQUATIONS ARE USED TO
EXAMINE THE RESPONSE OF THE ARCAS PARACHUTE TO
HYPOTHETICAL WIND PROFILES IN THE REGION EXTENDING
FROM 30 TO 60 KM. A COMPUTATIONAL SCHEME FOR
DETERMINING THE HORIZONTAL WIND FROM THE OBSERVED
MOTION OF ANY WIND SENSOR INFLUENCED ONLY BY THE
ABOVE FORCES IS PRESENTED, ALONG WITH AN EXAMPLE OF
ITS APPLICATION TO AN ARCAS PARACHUTE FLIGHT.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZLNCZ

AD-643 703 1/3

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

PARACHUTE,

SEP 66

4P

EFREMOV, E. F. PETKUS, G. V. 1

(U)

MORUZOVA, K. S. 1

REPT. NO. FTU-WT-66-104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF
PATENT (USSR) 171 274, APPL. 460905/40-23, 4 JAN.
65.

DESCRIPTORS: (•PARACHUTES, PATENTS), USSR, DESIGN,
STABILIZATION SYSTEMS, LIFT, HEMISPHERICAL SHELLS,
BODIES OF REVOLUTION, CONFIGURATION

(U)

THE OBJECT OF THE INVENTION IS A PARACHUTE WITH A
CANOPY IN THE FORM OF A CIRCULAR BELT. TO INCREASE
ITS COEFFICIENT OF LIFT AND ITS STABILITY, IT IS
EQUIPPED WITH A SMALL HEMISPHERICAL CANOPY. THE
SHROUD LINES OF WHICH GO THROUGH AN EYE RING THAT IS
FASTENED TO THE CENTRAL SHROUD LINE AND THE EXTERNAL
RIM IS CONNECTED WITH THE INTERNAL EDGE BY FOUR
MUTUALLY PERPENDICULAR SHROUD LINES. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZLNCZ

AD-658 672

20/11

ARMY NATICK LABS MASS OFFICE OF THE SCIENTIFIC
DIRECTOR

ON INEXTENSIONAL VIBRATIONS OF THIN SHELLS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,

JUL 67

34P

ROSS, EDWARD W., JR.

MONITOR: USA-VL-65

TR-68-14-USU

UNCLASSIFIED REPORT

DESCRIPTORS: BODIES OF REVOLUTION, VIBRATION,

ELASTICITY, APPROXIMATION (MATHEMATICS),

BOUNDARY VALUE PROBLEMS, SPHERES, TENTS,

PARACHUTES, CONTAINERS, MATHEMATICAL ANALYSIS (U)

IDENTIFIERS: THIN SPHERICAL SHELLS (U)

IN THIS PAPER, THE NON-SYMMETRIC, FREE, ELASTIC VIBRATIONS OF THIN DOMES OF REVOLUTION ARE STUDIED. IT IS ASSUMED THAT THE FREQUENCY IS LOW. THE ASYMPTOTIC APPROXIMATIONS PREVIOUSLY GIVEN BY THE WRITER ARE USED TO ESTIMATE THE GENERAL SOLUTION TO THE SHELL VIBRATION EQUATIONS AT LOW FREQUENCIES. APPROXIMATIONS FOR THE LOW NATURAL FREQUENCIES AND MODES ARE DERIVED SYSTEMATICALLY UNDER A VARIETY OF EDGE CONDITIONS. LOW NATURAL FREQUENCIES ARE FOUND ONLY WHEN THE EDGE CONDITIONS IMPOSE NO FORCES TANGENT TO THE SHELL SURFACE. WHEN THE EDGE IS FREE (AND ONLY THEN) RAYLEIGH'S INEXTENSIONAL FREQUENCIES ARE RECOVERED. FOR CERTAIN OTHER E. G. CONDITIONS NEW NATURAL FREQUENCIES ARE FOUND THAT ARE ABOVE RAYLEIGH'S FREQUENCIES BUT STILL LOW COMPARED, E. G., WITH THE LOWEST MEMBRANE FREQUENCY. THE DISPLACEMENT MODES ASSOCIATED WITH THESE NEW FREQUENCIES ARE MOSTLY OF INEXTENSIONAL TYPE. THE GENERAL RESULTS ARE APPLIED TO ESTIMATE THESE NEW FREQUENCIES FOR SPHERICAL DOMES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 740NC2

AD-664 665 1/3 15/7
STENCER AERO ENGINEERING CORP ASHEVILLE N C
LIFTING OF AERODYNAMIC DECELERATORS. (U)
DESCRIPTIVE NOTE: FINAL TECHNICAL REPT.,
104 66 76P OATES, RONALD W. MYUST,
CHARLES A. MARTINEZ, A. L. J
CONTRACT: DA-19-129-AMC-850(N)
PROJ: DA-M1214010195
MONITOR: USA-NLAD5 TR-68-66-AD

UNCLASSIFIED REPORT

DESCRIPTORS: (*DRA: PARACHUTES, LIFT), (*AIR
DROP OPERATIONS, *CARGO PARACHUTES),
PERFORMANCE(ENGINEERING), COMPUTER PROGRAMS,
TRAJECTORIES, INFLATABLE STRUCTURES, WEIGHT,
GEOMETRIC FORMS, AVIATION SAFETY, COSTS,
LOGISTICS, TRAINING, RELIABILITY, LOW ALTITUDE,
ARMY OPERATIONS (U)
IDENTIFIERS: PARACHUTE CANOPIES, *LOADS(LIFTING OF
AERODYNAMIC DECELERATORS), *LIFTING OF
AERODYNAMIC DECELERATORS (U)

PROGRESS IS REPORTED FOR ALL WORK ACCOMPLISHED ON
THE FOLLOWING ACTIVITIES: (1) ANALYTICAL
STUDIES-PARACHUTE DYNAMICS, PARACHUTE PERFORMANCE
REQUIRED FOR LOW LEVEL CARGO DELIVERY; COMPUTER
TRAJECTORY PROGRAM; PERFORMANCE SUMMARY AND
CONCLUSIONS; (2) RUNWAY LEVEL TEST RESULTS OF
PARACHUTE INFLATION AND FORCE-TIME HISTORIES WITH
AERODYNAMIC ASSISTANCE AND LIFTING CANOPIES; (3)
WEIGHT AND SIZE LIMITS, FLIGHT SAFETY, SYSTEM WEIGHT
AND COST; LOGISTICS AND TRAINING; (4) FUNCTIONAL
RELIABILITY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-675 181 1/3 20/4
GOODYEAR AEROSPACE CORP AKRON OHIO
ESTABLISHMENT OF AN UNSYMMETRICAL WAKE TEST
CAPABILITY FOR AERODYNAMIC DECELERATORS. VOLUME 1.
TEST VEHICLE DESIGN MODIFICATION. (U)
DESCRIPTIVE NOTE: FINAL REPT. 1 MAR-15 OCT 68,
AUG 68 222P HENKE, DANIEL H. I
REPT. NO. GER-13528-VOL-1
CONTRACT: AF 33(615)-3595
PROJ: AF-6065
TASK: 606507
MONITOR: AFFDL TR-67-192-VOL-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 3, AD-675 182.

DESCRIPTORS: (•LIFTING REENTRY VEHICLES,
DECELERATION), (•SUPERSONIC TEST VEHICLES,
WAKE), SUPERSONIC CHARACTERISTICS, FEASIBILITY
STUDIES, FREE FLIGHT TRAJECTORIES, AERODYNAMIC
HEATING, INFLATABLE STRUCTURES, RECOVERY, DRAG
PARACHUTES, DESIGN, WIND TUNNEL MODELS (U)
IDENTIFIERS: •AERODYNAMIC DECELERATORS, ARAPAHO
C TEST VEHICLES (U)

THE RESULTS OF WIND TUNNEL INVESTIGATIONS,
ANALYSES, AND PRELIMINARY DESIGN EFFORTS PERFORMED IN
ORDER TO SHOW THE FEASIBILITY OF ACCOMPLISHING
SUPERSONIC FREE FLIGHT TESTS OF DEPLOYABLE
AERODYNAMIC DECELERATORS IN THE WAKE OF AN
UNSYMMETRICAL FOREBODY ARE DESCRIBED. THE RESULTS
SHOW THAT THE SIMULATION OF THE WAKE OF A
NONAXISYMMETRIC LIFTING BODY IS FEASIBLE AND
PRACTICABLE BY INTEGRATING INFLATABLE AFT-APPENDAGES
ON AN ARAPAHO C TEST VEHICLE AND THAT THE
RESULTANT MODIFIED VEHICLE RETAINS THE SAME TEST
CAPABILITIES AS THE BASIC ARAPAHO C. THE
MODIFIED VEHICLE DESIGN ALSO INCLUDES MODIFICATIONS
REQUIRED FOR COMPLIANCE WITH EGLIN AFB/EGLIN
GOLF TEST RANGE SAFETY CRITERIA. INCLUDED
ARE RECOMMENDATIONS FOR FURTHER VEHICLE MODIFICATIONS
THAT WOULD IMPROVE THE TEST CAPABILITIES OF THE BASIC
ARAPAHO C TEST VEHICLE. A VEHICLE MOCKUP WAS
CONSTRUCTED TO DEMONSTRATE FEASIBILITY OF THE
APPROACH AND TO PRECLUDE MAJOR ASSEMBLY AND ACTUATION
INTERFERENCE PROBLEMS. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-675 182 1/3 20/4
GOODYEAR AEROSPACE CORP A. OHIO
ESTABLISHMENT OF AN UNSYMMETRICAL WAKE TEST
CAPABILITY FOR AERODYNAMIC DECELERATORS. VOLUME III.
EXPERIMENTAL WAKE SURVEY AND BODY SURFACE PRESSURE
DATA. (U)
DESCRIPTIVE NOTE: FINAL REPT. 1 MAR 66-1 JAN 68,
AUG 68 353P HENKE, DANIEL W. ;
REPT. NO. GER-13528-VOL-3
CONTRACT: AF 33(615)-3595
PROJ: AF-6065
TASK: 606507
MONITOR: AFFDL TR-67-192-VOL-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME I, AD-675 181.

DESCRIPTORS: (•LIFTING REENTRY VEHICLES,
DECELERATION), (•SUPERSONIC TEST VEHICLES, DRAG
PARACHUTES), WAKE, ASYMMETRIC BODIES, AXIALLY
SYMMETRIC FLOW, BOUNDARY LAYER, SUPERSONIC
CHARACTERISTICS, EXPERIMENTAL DATA, PRESSURE,
DISTRIBUTION, TABLES, DRAG, SURFACE PROPERTIES,
RECOVERY, WIND TUNNEL MODELS (U)
IDENTIFIERS: •AERODYNAMIC DECELERATORS, PRESSURE
DISTRIBUTION, PARASONIC PARACHUTES (U)

A SERIES OF WIND TUNNEL TESTS WAS CONDUCTED TO
DETERMINE PRESSURE DISTRIBUTION ON THE SURFACE OF AND
IN THE WAKE OF AXISYMMETRIC AND ASYMMETRIC
(ELLIPTICAL) FOREBODIES. THESE TESTS WERE
CONDUCTED IN SUPPORT OF BOUNDARY LAYER AND WAKE
ANALYSES REQUIRED AS A BASIS FOR ESTABLISHING AN
ANALYTICAL METHOD FOR PREDICTING THE DRAG OF
PARASONIC PARACHUTES DEPLOYED IN THE WAKES OF THESE
FOREBODIES. THE ANALYSIS OF THE DATA OBTAINED
DURING THIS TEST IS DESCRIBED IN VOLUMES I AND
II OF THE REPORT. TABULATIONS OF THE DATA
OBTAINED DURING THESE TESTS ARE PRESENTED IN THIS
VOLUME. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-681 880 1/3

ARMY NATICK LABS MASS OFFICE OF THE SCIENTIFIC
DIRECTION

APPROXIMATE ANALYSIS OF A FLAT, CIRCULAR PARACHUTE
IN STEADY DESCENT. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,

DEC 68 52P ROSS, EDWARD W. , JR.

PROJ: DA-1-F-162203-0-195

MONITOR: USA-NLABS TR-69-51-USD

UNCLASSIFIED REPORT

DESCRIPTORS: (*PARACHUTES, DESIGN), DESCENT,
PARACHUTE FABRICS, APPROXIMATION (MATHEMATICS),
STRESSES, DEFORMATION, PRESSURE, DRAG,
AERODYNAMIC CONFIGURATIONS, DEFLECTION,
DISTRIBUTION, DIFFERENTIAL EQUATIONS, INTEGRATION,
THEORY (U)

IDENTIFIERS: STRESS ANALYSIS, PRESSURE
DISTRIBUTION (U)

A THEORY IS PRESENTED FOR THE STRESS ANALYSIS OF A
FLAT, CIRCULAR PARACHUTE IN STEADY, VERTICAL DESCENT.
UNLIKE PREVIOUS TREATMENTS OF THE PROBLEM, THIS
THEORY DOES NOT ASSUME THAT THE SHAPE IS KNOWN.
INSTEAD THE THEORY PRESENTS RELATIONS BETWEEN THE
PRESSURE DISTRIBUTION IN THE OPENED CONDITION AND THE
SHAPE, DRAG AND STRESSES IN LINES AND FABRIC. THE
THEORY RESULTS IN A NON-LINEAR THIRD ORDER SYSTEM OF
ORDINARY DIFFERENTIAL EQUATIONS WITH BOUNDARY
CONDITIONS AT BOTH VENT AND SKIRT. THIS SYSTEM WAS
SOLVED BY A COMPUTER PROGRAM BASED ON THE RUNGE-
KUTTA METHOD OF NUMERICAL INTEGRATION. THE
RESULTS ARE IN FAIRLY GOOD AGREEMENT WITH
MEASUREMENTS ON PARACHUTES. THE COMPUTER PROGRAM
CAN BE USED FOR STUDIES OF EFFECTS OF DESIGN CHANGES
ON SHAPE, DRAG AND STRESS, AND THE RESULTS OF A SMALL
STUDY OF THIS SORT ARE INCLUDED. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDNC2

AD-687 307 1/3
ARMY NATICK LABS MASS OFFICE OF THE SCIENTIFIC
DIRECTOR
ANALYSIS OF A PARACHUTE WITH A PULLED-DOWN
VENT. (U)
DESCRIPTIVE NOTES: TECHNICAL REPT.,
FEB 69 43P ROSS, EDWARD W. JR;
PROJ: DA-1-F-162203-D-195
MONITOR: USA-NLABS TR-69-71-USD

UNCLASSIFIED REPORT

DESCRIPTORS: (PARACHUTES, AERODYNAMIC
CONFIGURATIONS), PARACHUTE DESCENTS, STRESSES,
AERODYNAMIC CONTROL SURFACES, MATHEMATICAL MODELS,
NUMERICAL ANALYSIS, DESIGN,
PROGRAMMING (COMPUTERS), PARACHUTE FABRICS,
STRAIN (MECHANICS) (U)
IDENTIFIERS: PARACHUTE VENTS (U)

THE ANALYSIS FOR FLAT CIRCULAR CANOPIES IN STEADY
DESCENT IS HERE EXTENDED TO DEAL WITH CANOPIES HAVING
A PULLED-DOWN VENT. A GENERAL THEORY IS DEVELOPED,
AND A PARTIAL, APPROXIMATE SOLUTION IS FOUND IN
CLOSED FORM FOR CERTAIN CONDITIONS. THE GENERAL
THEORY IS TAKEN AS THE BASIS OF A COMPUTER PROGRAM.
AN EXAMPLE IS WORKED OUT TO DEMONSTRATE THE USE OF
THE PROGRAM IN DETERMINING THE OPTIMUM LENGTH OF
CENTER LINE. THE RESULTS ARE COMPARED WITH TESTS
AND FAIRLY GOOD AGREEMENT IS OBTAINED. THE MOST
INTERESTING OUTCOME IS THE PREDICTION THAT THE
MAXIMUM FABRIC STRESS IS GREATLY REDUCED BY PULLING
THE VENT DOWN. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. AZONC2

AD-693 154 1/2 9/2
TACTICAL AIRLIFT CENTER POPE AFB H C OFFICE OF OPERATIONS
ANALYSIS
MINIMUM DROP ALTITUDES AND HORIZONTAL DISTANCES FOR
HIGH ALTITUDE, REEFED PARACHUTE DROPS. (U)
DESCRIPTIVE NOTE: TECHNICAL MEMO.,
JUL 69 36P MANSON, A. R. J
REPT. NO. TALC-DA-TM-4

UNCLASSIFIED REPORT

DESCRIPTORS: 1-PARACHUTE DESCENTS, MATHEMATICAL
PREDICTION), LOADING(MECHANICS), TIME,
RANGES(DISTANCE), ALTITUDE, COMPUTER PROGRAMS,
REGRESSION ANALYSIS, STATISTICAL PROCESSES,
OPERATIONS RESEARCH, TACTICAL AIR COMMAND (U)
IDENTIFIERS: RING SLOT PARACHUTES, COMPUTER
ANALYSIS (U)

THE PAPER GIVES A PRACTICAL METHOD OF PREDICTING
THE MINIMUM DROP ALTITUDE AND THE HORIZONTAL DISTANCE
FOR G-120, 28-FOOT RING-SLOT, AND 22-FOOT RING-
SLOT PARACHUTES FOR LOADS USING 20, 30, AND 40 SECOND
SLUIS, DISREEFING CUTTERS. THE STATISTICAL METHODS
USED ARE THOSE OF MULTIPLE REGRESSION BASED ON THE
OBSERVED THEODOLITE DATA FROM 46 DROPS. SUFFICIENT
DETAIL IS GIVEN TO ALLOW EXTENSION OF THE TABLED
RESULTS TO PHYSICAL SITUATIONS NOT SPECIFICALLY
INCLUDED. (AUTHOR) (U)

UNCLASSIFIED

JDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONCZ

AD-693 355 1/3 1/4 20/4
LOCKHEED MISSILES AND SPACE CO SUNNYVALE CALIF
UNSTEADY SOLUTION OF THE FLOW-FIELD OVER CONCAVE
BODIES.

(U)

DESCRIPTIVE NOTE: TECHNICAL NOTES,
OCT 68 3P BASTIANON, RICARDO A. ;

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN AIAA JNL., V7 N3 P531-533
MAR 69.

SUPPLEMENTARY NOTE: REVISION OF REPORT DATED 12 SEP 68.
PRESENTED AT AIAA AERODYNAMIC DECELERATION SYSTEMS
CONFERENCE (2ND) EL CENTRO, CALIF. 23-25 SEP 68,
PAPER 68-946. SPONSORED IN PART BY DEPARTMENT OF THE
NAVY, WASHINGTON, D. C.

DESCRIPTORS: (•PARACHUTES, FLOW FIELDS),
STABILITY, SUPERSONIC CHARACTERISTICS, CURVED
PROFILES, SHOCK WAVES, INFLATABLE STRUCTURES,
THREE-DIMENSIONAL FLOW, NUMERICAL ANALYSIS,
AXIALLY SYMMETRIC FLOW

(U)

IDENTIFIERS: UNSTEADY FLOW, PARACHUTE CANOPIES,
CONCAVE BODIES

(U)

THE FLUID FLOW AROUND A CONCAVE BODY IMMERSED IN A
SUPERSONIC FREESTREAM SHOWS AERODYNAMIC INSTABILITY.
THIS FACT HAS BEEN OBSERVED EXPERIMENTALLY IN
SUPERSONIC PARACHUTES WHERE A SHOCK WAVE MOVES BACK
AND FORTH AHEAD OF THE CANOPY TO AFFECT THE INFLATION
STABILITY. THE REPORT ATTEMPTS TO EXPLAIN THIS
INSTABILITY BY THE NUMERICAL COMPUTATION OF THE
AXISYMMETRIC INVISCID FLOW OVER A NONPOROUS CAVITY.
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-698 456

1/3

17/7

ARMY NATICK LABS MASS

WIND EFFECT ON GLIDING PARACHUTE SYSTEMS WITH NON-
PROPORTIONAL AUTOMATIC HOMING CONTROL.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,

NOV 69

67P

GOODRICK, THOMAS F. I

REPT. NO. USA-NLABS-TR-70-28-AD

PROJ: DA-1-F-162203-U-195

UNCLASSIFIED REPORT

DESCRIPTORS: (•PARACHUTE DESCENTS, •RADIO HOMING),
(•IMPACT PREDICTION, PARACHUTE DESCENTS),
PARACHUTINGS, REMOTE CONTROL SYSTEMS, RADIO
EQUIPMENT, CIRCULAR ERROR PROBABLE, PROBABILITY,
DEPLOYMENT, ITERATIONS, GLIDE PATH SYSTEMS,
WIND, NONPOWERED FLIGHT

(U)

EQUATIONS ARE PRESENTED AND EVALUATED FOR
ESTIMATING THE WIND EFFECT ON THE APPROACH PATH AND
DESCENDING ORBIT OF GLIDING PARACHUTE SYSTEMS WITH
NON-PROPORTIONAL AUTOMATIC HOMING CONTROL. EXACT
EQUATIONS ARE PRESENTED FOR DETERMINING CERTAIN
CHARACTERISTIC FEATURES OF THE DESCENDING ORBIT.
ITERATION EQUATIONS ARE PRESENTED INCORPORATING
HOMING SIMULATION FOR CALCULATING POINTS AT EQUAL
TIME INTERVALS ALONG THE GROUND TRACK. THE CONTROL
RESPONSE TIME, EFFECT OF DEPLOYMENT POSITION, AND
IMPACT POSITION PROBABILITY ARE DISCUSSED. AN
EMPIRICAL EQUATION FOR THE RADIUS OF THE CIRCLE OF
EQUAL PROBABILITY AS A FUNCTION OF TURNING RADIUS,
WIND VELOCITY, AND SYSTEM VELOCITY IS PRESENTED. A
PARAMETRIC ANALYSIS OF THE EQUATIONS IS GIVEN FOR
SYSTEMS WITH GLIDE RATIOS FROM 2.0 TO 3.0 AND TURNING
RADIUS OF 75 FT AND 100 FT IN WINDS OF FROM 4 TO 32
PPS. THE ANALYSIS SHOWS THAT ACCURACY IS MORE
DEPENDENT ON HIGH GLIDE RATIO THAN ON TURNING RADIUS.
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZUNC2

AD-713 520 1/3 1/1
ARMY NATICK LABS MASS
THE INTERNAL AND EXTERNAL FLOW FIELD ASSOCIATED WITH
PARACHUTES DURING INFLATION, (U)
70 15P DE SANTIS, GREGORY C. :

UNCLASSIFIED REPORT

DESCRIPTORS: (•PARACHUTES, •FLOW FIELDS),
ANEMOMETERS, MODEL TESTS, WIND TUNNEL MODELS, (U)
AERODYNAMIC CHARACTERISTICS
IDENTIFIERS: •INFLATING, C-9 PARACHUTE (U)
CANOPIES

A HOT-WIRE ANEMOMETER WAS USED TO OBTAIN DATA ON
THE FLOW FIELD ASSOCIATED WITH AN INFLATING
PARACHUTE. SEVEN MODELS SIMULATING VARIOUS STAGES
OF INFLATION OF THE C-9 PARACHUTE WERE FABRICATED
AND TESTED IN A SPECIALLY CONSTRUCTED TEST SECTION
WHERE THE TEMPERATURE COULD BE HELD UNIFORM. USING
THIS METHOD, IT WAS POSSIBLE TO ACCURATELY MEASURE
THE INTERNAL AND EXTERNAL FLOW SURROUNDING THE
CANOPY. SOME POSSIBLE APPLICATIONS OF THE DATA TO
FULL-SCALE PARACHUTE SYSTEMS ARE PRESENTED.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONCZ

AD-718 608 1/3
NAVAL ORDNANCE LAB WHITE OAK MD
A NEW APPROACH TO THE DETERMINATION OF THE
STEADY-STATE INFLATED SHAPE AND INCLUDED
VOLUME OF SEVERAL PARACHUTE TYPES IN 24-
GORE AND 30-GORE CONFIGURATIONS.
SEP 70 56P LUDTKE, WILLIAM P. ;
REPT. NO. NOLTR-70-178

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: (PARACHUTES, AERODYNAMIC
CONFIGURATIONS), INFLATABLE STRUCTURES, VOLUME,
POROUS MATERIALS, MODEL TESTS, STRESSES,
SHOCK(MECHANICS), RIBBON PARACHUTES
IDENTIFIERS: PARACHUTE CANOPIES

(U)

(U)

AD-702041 DOCUMENTED A NEW METHOD OF DETERMINING
THE STEADY-STATE INFLATED SHAPE AND INCLUDED VOLUME
OF SEVERAL TYPES OF PARACHUTES IN 12-GORE AND 16-GORE
CONFIGURATIONS. THIS REPORT USES THE METHODS AND
TECHNIQUE OF AD-702 041 TO EXTEND THE DATA TO 24-
GORE AND 30-GORE CONFIGURATIONS OF THE FLAT CIRCULAR,
10 PERCENT EXTENDED SKIRT, 16 PERCENT POROUS RING
SLOT AND 24 PERCENT POROUS RIBBON PARACHUTES. THE
INFLATED ELLIPTICAL SHAPES OF THE VARIOUS CANOPIES
WERE OBTAINED FROM PHOTOGRAPHIC RECORDS OF THE WIND-
TUNNEL TESTS AT VARIOUS VELOCITIES FROM 17 MPH TO 200
MPH USING PARACHUTE MODELS OF APPROXIMATELY 40-INCH
FLAT DIAMETER. THE STEADY-STATE CANOPY VOLUME
INCLUDES THE VOLUME OF THE BILLOWED GORE PANEL AND AN
AIR VOLUME AHEAD OF THE CANOPY SKIRT HEM. THE
RESULTS OF THIS INVESTIGATION ARE PARTICULARLY
APPLICABLE TO STUDIES OF CANOPY STRESS ANALYSIS AND
DETERMINATION OF THE VOLUME OF AIR WHICH MUST BE
COLLECTED DURING CANOPY INFLATION PROCESS FOR USE IN
THE CALCULATION OF OPENING-SHOCK FORCE.

(AUTHOR)

(U)

III. MATERIALS

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 740NC4

AD-603 129

MRD DIV GENERAL AMERICAN TRANSPORTATION CORP FILES
ILL

INSTANTANEOUS LOCAL TEMPERATURES OF AERODYNAMIC
DECELERATORS. PART II. THERMAL PROPERTIES, (U)

DESCRIPTIVE NOTE: REPT. FOR JUL 59-AUG 60,

FEB 61 162P ENGHOLM, E. ILIS, S. J. ;

BAMBECK, R. A. ;

CONTRACT: AF33 616 6673

PROJ: 7320

TASK: 73201

MONITOR: WADD, Pa TR60 670 P2: 171954

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (PARACHUTE FABRICS, THERMAL CONDUCTIVITY),
(PRE-ENTRY VEHICLES, PARACHUTE FABRICS), NYLON,
STAINLESS STEEL, GLASS TEXTILES, GRAPHITE, FIBERS
(SYNTHETIC), ORGANIC MATERIALS, LOADING (MECHANICS),
STRESSES, HEAT TRANSFER, TESTS, TEST EQUIPMENT,
SATELLITES (ARTIFICIAL), AERODYNAMIC HEATING (U)
IDENTIFIERS: AF-1 (U)

MEASUREMENTS WERE MADE OF THE THERMAL CONDUCTIVITY
OF THE FOLLOWING CANDIDATE PARACHUTE FABRICS:
NYLON, STAINLESS STEEL, GLASS, GRAPHITE, AND AF-1
(AN ORGANIC FIBER). DATA WERE OBTAINED WITH A
CENCO-FITCH DEVICE IN WHICH THE EFFECTS OF
COMPRESSIVE LOAD WAS ESTABLISHED. A SIMILARITY
RELATION DERIVED FROM DIMENSIONAL ANALYSIS WAS
APPLIED TO THESE DATA AND RESULTED IN A SATISFACTORY
CORRELATION. A NEW APPARATUS WAS DEVELOPED IN
ORDER TO DETERMINE FABRIC CONDUCTIVITY UNDER VARYING
CONDITIONS OF TEMPERATURE (212 TO 600F), AMBIENT
PRESSURE (15 TO 0.046 PSIA), BIAxIAL TENSION (0
TO 40 PPI), AND COMPRESSION (1 TO 10 PSI).
INITIAL DATA COLLECTED USING THE APPARATUS
DEMONSTRATED ITS CAPABILITIES AND ANALYSIS OF THESE
DATA INDICATE THE POSSIBILITY OF FURTHER
DIMENSIONLESS CORRELATIONS IN WHICH THE EFFECTS OF
BIAxIAL TENSION MAY BE NEGLIGIBLE. CONSIDERABLY
MORE DETAILED DATA WILL HAVE TO BE OBTAINED TO
ESTABLISH REPEATABILITY AND VERIFICATION OF THESE
HYPOTHESES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /40NC4

AD-607 890

PROJESCO INC PERKASIE PA

DEVELOPMENT OF NOMEX MESH MATERIALS.

(U)

DESCRIPTIVE NOTE: REPT. FOR JUN 63-JUN 64,

SEP 64 22P BROCKMAN, H. I.

CONTRACT: AF33 657 12257

PROJ: 5708

MONITOR: NL TOR64 208

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (PARACHUTE FABRICS, NYLON), (NYLON, PARACHUTE FABRICS), PROCESSING, WEAVING, TENSILE PROPERTIES, POROSITY, PERMEABILITY

(U)

THE OBJECTIVE OF THIS CONTRACT WAS TO DEVELOP A WOVEN MESH MATERIAL, USING NOMEX AS THE RA MATERIAL YARN, HAVING A 100 POUNDS PER INCH BREAKING STRENGTH IN BOTH DIRECTIONS AND A GEOMETRIC POROSITY OF 35% OR A PERMEABILITY OF 900-1000 CUBIC FEET/ MINUTE/SQUARE FOOT. TWIST LEVELS FROM 5 TO 20 TURNS PER INCH WERE EVALUATED IN BOTH WARP AND FILLING DIRECTIONS TO DETERMINE THE EFFECT OF TWIST ON THE PERMEABILITY. VARIOUS CONSTRUCTIONS AND WEAVES RANGING FROM PLAIN WEAVE TO MOCK LENO WERE USED TO DETERMINE THE MAXIMUM PERMEABILITY WITH THE REQUIRED BREAKING STRENGTH. THE MOCK LENO WEAVE WAS DETERMINED TO BE THE MOST SATISFACTORY TO ACHIEVE A PROPER BALANCE OF PROPERTIES. THE LEVEL OF TWIST AFFECTED THE AIR PERMEABILITY FAR MORE DRAMATICALLY THAN WAS EXPECTED WITH THE RESULT THAT A RATHER HIGH TWIST WAS USED IN THE FINAL PRODUCT. THIS STUDY DEMONSTRATED THE FEASIBILITY OF DESIGNING AND LEAVING A FABRIC FROM NOMEX NYLON WHICH WOULD HAVE THE PROPERTIES FOR USE IN SPECIAL TYPE OF PARACHUTE APPLICATIONS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 7ZUNC2

AD-614 136

MINNESOTA UNIV MINNEAPOLIS

PARACHUTE STRESS ANALYSIS DURING INFLATION AND AT
STEADY STATE.

(U)

63 35P HEINRICH, H. G. ; JAMISON, L.

R. , JR. ;

CONTRACT: AF33 657 11184

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH PIONEER
PARACHUTE CO., INC., MANCHESTER, CONN. PRESENTED
AT THE AIAA ENTRY TECHNOLOGY CONFERENCE, HELD AT
WILLIAMSBURG, VA., 12-14 OCT 64.

DESCRIPTORS: (*PARACHUTES, STRESSES), (*PARACHUTE
FABRICS, STRESSES), NUMERICAL ANALYSIS, DRAG,
AERODYNAMIC LOADING, ELASTICITY, CONFIGURATION

(U)

THE STRESSES OCCURRING IN THE CLOTH OF A PARACHUTE
DURING THE PERIOD OF INFLATION AND UNDER STEADY STATE
ARE CALCULATED FOR A NUMBER OF INSTANTANEOUS SHAPES
WHICH ARE CHARACTERISTIC OF THE OPENING PROCESS AND
THE STEADY STATE. THE METHOD IS GENERAL AND MAY BE
APPLIED TO ANY TYPE OF PARACHUTE BUILT OUT OF SOLID
CLOTH, CONCENTRIC RINGS OR RIBBONS. THE PRESENTED
ANALYSIS IS RELATED TO CANOPIES CONSISTING OF
TRIANGULAR GORES BUT CAN BE EXTENDED TO OTHER GORE
PATTERNS. A NUMERICAL CALCULATION IS MADE FOR A
SOLID FLAT CIRCULAR PARACHUTE DURING THE PERIOD OF
OPENING AND AT STEADY STATE. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONCZ

AD-617 930

PRODESCO INC PERKASIE PA.

WOVEN MESH FROM BRAIDED NYLON CORD.

(U)

DESCRIPTIVE NOTE: REPT. FOR 1 JAN-1 JUL 64,

APR 65 22P

BROCKMAN, H. C. MCGRATH, J.

C. RUSS, J. H. I

CONTRACT: AF33 657 12257

PROJ: 5708

MONITOR: ML , TR-64-413

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*NYLON, TEXTILES), (*WEAVING, NYLO-), CORDAGE, PARACHUTE FABRICS, FIBERS, FIBERS(SYNTHETIC), TENTILE PROPERTIES, POROSITY, PERMEABILITY

(U)

THE OBJECTIVE OF THIS PROGRAM WAS TO DEVELOP A WOVEN MESH MATERIAL USING MIL-C-5040, TYPE I CORD AND COMMERCIAL GRADE, HIGH TENACITY NYLON YARN IN ORDER TO ACHIEVE A 1000-1200 LB./IN. BREAKING STRENGTH IN THE WARP AND FILLING DIRECTIONS AND A GEOMETRIC POROSITY OF 35%, OR A PERMEABILITY OF 800-900 CU.FT./SQ.FT./MIN. BINDER YARNS FROM 3. DENIER TO 200 DENIER WERE EVALUATED IN ORDER TO ACHIEVE THE STRONGEST POSSIBLE BOND BETWEEN WARP AND FILLING CORDS. VARIOUS CONSTRUCTIONS, RANGING FROM 7 ENDS AND PICKS OF CORD TO 9 ENDS AND PICKS OF CORD, WERE EVALUATED TO ACHIEVE THE OPTIMUM COMBINATION OF BREAKING STRENGTH AND AIR PERMEABILITY. UNUSUAL PROBLEMS WERE ENCOUNTERED IN WEAVING THE CORD BECAUSE OF ITS BULK AND STIFFNESS. CONSIDERABLE YARDAGE WOULD HAVE TO BE MANUFACTURED IN ORDER TO DETERMINE THE COMMERCIAL PRACTICALITY OF THE MANUFACTURING TECHNIQUE. THIS STUDY DEMONSTRATED THE FEASIBILITY OF DESIGNING AND WEAVING A FABRIC USING A 100 LB. BREAKING STRENGTH CORD IN A CRIMPLESS WEAVE FOR USE IN SPECIAL TYPES OF PARACHUTE APPLICATIONS.

(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT ETHNOGRAPHY SEARCH CONTROL NO. 7ZONC2

AD-668 907 11/5 1474
ARMY NATICK LABS MASS CLOTHING AND ORGANIC MATERIALS
LAB
THE APPLICATION OF THE CONCEPT OF RELIABILITY TO
TEXTILE PRODUCTS. (U)
DESCRIPTIVE NOTE: SUMMARY REPT. MAY 66-SEP 67,
SEP 67 SUP KENNEDY, STEPHEN J. DEER,
LOUIS A. I
REPT. NO. C/UM-TS-153
PROJ: DA-1C024401A329
MONITOR: USA-NLABS TR-68-23-CM

UNCLASSIFIED REPORT

DESCRIPTORS: (TEXTILES, RELIABILITY), PARACHUTE
FABRICS, BODY ARMOR, STRESSES, MALFUNCTIONS,
STRENGTH, CLOTHING, FIBERS, CORDAGE,
TOLERANCES (MECHANICS), QUALITY CONTROL,
REVIEWS (U)

IN COMMON WITH MANY OTHER NATURAL PRODUCTS, THE
NATURE AND USE PATTERNS OF ITEMS OF TEXTILE CLOTHING
AND EQUIPAGE ARE SUCH THAT DATA FOR FORMULATING EXACT
MODELS FOR PREDICTING RELIABILITY IN TERMS OF
'MISSION TIMES' AND 'MEAN-TIMES-BETWEEN FAILURES' ARE
NOT EASILY OBTAINABLE. HOWEVER, RELIABILITY
ANALYSIS BASED UPON THE PROBABILITY OF DETERMINING
WHETHER OR NOT A GIVEN CHARACTERISTIC FALLS WITHIN
THE USE REQUIREMENTS FOR THE MATERIAL OR MATERIAL
SYSTEM HAS BEEN FOUND FEASIBLE IN MANY CASES. A
CONSIDERABLE AMOUNT OF SUCH DATA IS AVAILABLE AND IS
PRESENTED IN THE REPORT TO SUGGEST POSSIBLE
APPROACHES FOR RELIABILITY ANALYSIS STUDIES. SOME
OF THE INHERENT PROBLEMS IN APPLYING RELIABILITY
ANALYSIS TO A BROAD RANGE OF TEXTILE END ITEMS ARE
EXAMINED AND DISCUSSED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 120N02

AD-665 YIL 11/5 1/3
ARMY NATICK LABS MASS CLOTHING AND ORGANIC MATERIALS
LAB
STRENGTH LOSSES IN NYLON PARACHUTE MATERIALS WITH
TIME, EXPOSURE AND USE (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
MAR 58 59P FIGUERA, FRANK J. WHEELS,
RICHARD D. J.
REPT. NO. C/00-TS-156
MONITOR: USA-ALABS TR-68-45-CR

UNCLASSIFIED REPORT

NOT REPRODUCIBLE

DESCRIPTORS: (PARACHUTE FABRICS, NYLON), LIFE
EXPECTANCY, STRENGTH, PARACHUTES, EXPOSURE,
STORAGE, WEAR RESISTANCE, PARACHUTE JUMPING,
PERFORMANCE (ENGINEERING), DEGRADATION (U)
IDENTIFIERS: PERSONNEL PARACHUTES (U)

THE FINDINGS OF RECENT TESTS ON AGED AND USED NYLON
PARACHUTES ARE REVIEWED WITH RESPECT TO SERVICE LIFE
LIMITS AND TO IMPLICATIONS AS TO THE TECHNICAL NATURE
OF THE DEGRADATION PROBLEM. THE DATA TEND TO
CONFIRM THAT THE CURRENT 10 YEAR OR 100 JUMP LIMITS
AND RELATED REPAIR COST LIMIT SCHEDULES DO NOT
PRESENT A HAZARD. HOWEVER, THE SCATTER AND
CONTRASTS OF RESULTS MAKE QUESTIONABLE THE VALIDITY
OF SMALL SAMPLINGS AND EXTENDED PREDICTIONS. NO
CONSISTENT AND PERVASIVE TRENDS WERE FOUND TO BE
DIRECTLY RELATED TO TIME IN STORAGE OR SERVICE, OR TO
JUMP HISTORY EXCEPT FOR INITIAL MECHANICAL EFFECTS ON
SUSPENSION LINES. THE RESULTS EVIDENCED MARKED
DIFFERENCES IN THE SPECIFIC SUSCEPTIBILITIES OF
VARIOUS MATERIALS, AND A NUMBER OF DEGRADING
INFLUENCES AND TYPES OF EFFECTS ON PHYSICAL
PROPERTIES. IT IS CONCLUDED THAT A WIDE
DISTRIBUTION OF STRENGTH LEVELS IS TO BE EXPECTED IN
OLDER PARACHUTE POPULATIONS, AND THAT THE RISK
PROBLEM IS WITH THE EXCEPTIONAL CASES RATHER THAN
WITH THE AVERAGE CONDITION. A NUMBER OF POSSIBLE
CHEMICAL AND STRUCTURAL CHANGE MECHANISMS ARE
DISCUSSED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /404C4

AD-670 185 11/5
FABRIC RESEARCH LABS INC DEUNAN MASS
INVESTIGATION OF THE HIGH-SPEED IMPACT BEHAVIOR OF
FIBROUS MATERIALS. (U)
DESCRIPTIVE NOTE: REPT. FOR FEB 66-DEC 67,
FEB 68 130P COSKREN, ROBERT J. ;
CONTRACT: AF 33(616)-2569
PROJ: AF-7361
TASK: 736104
MONITOR: AFML TR-68-46

UNCLASSIFIED REPORT

NOT REPRODUCIBLE

DESCRIPTORS: (PARACHUTE FABRICS, MECHANICAL
PROPERTIES), GLASS TEXTILES,
FIBERS(SYNTHETIC), NYLON, BENZIMIDAZOLES,
HEAT-RESISTANT MATERIALS, RUPTURE, TENSILE
PROPERTIES, STAINLESS STEEL, TAPES, IMPACT,
STRAIN(MECHANICS), THERMODYNAMICS (U)
IDENTIFIERS: NOMEX, PBI FIBERS, PRO-14 FIBERS,
A-101 FIBERS (U)

FOUR NEWLY DEVELOPED FIBERS (PBI, A-101, PRO-14 AND BETA GLASS) WERE EVALUATED IN WEBBING FORM (3000-9000 LBS BREAKING STRENGTH) FOR RUPTURE ENERGY ABSORPTION CAPACITY AT 200, 500, AND 700 FT/SEC (STRAIN RATES OF 5,000; 20,000 AND 20,000/SEC BASED UPON AN INITIAL 2.5 FOOT GAGE LENGTH). THE DYNAMIC ENERGY ABSORPTION CAPABILITY OF THE PRO-14 WEBBING IS ESSENTIALLY UNCHANGED OVER THE ENTIRE SPEED RANGE STUDIED. THE RUPTURE ENERGY OF THE A-101 WEBBING IS DIMINISHED BY 20% AS TESTING SPEED IS INCREASED UP TO 500 FT/SEC AND THEN EXHIBITS A LOSS OF APPROXIMATELY 70% AT 700 FT/SEC. THE PBI EXHIBITS A 50% LOSS FROM QUASI-STATIC UP TO THE 500 FT/SEC TESTING SPEED AND DIMINISHES TO APPROXIMATELY 10% OF QUASI-STATIC AT 700 FT/SEC. THE ENERGY LEVEL OF THE BETA GLASS IMPROVES OR REMAINS ALMOST UNCHANGED IN THE ENTIRE SPEED RANGE. GENERALLY, HOWEVER, THIS LEVEL IS OF SUCH A LOW ORDER THAT THE USEFULNESS OF BETA GLASS IS LIMITED TO CASES WHERE EXPOSURE TO ELEVATED TEMPERATURES IN EXCESS OF 850F MAY BE ANTICIPATED. SIX FIBERS WERE EVALUATED IN TARE FORM (300-675 LBS BREAKING STRENGTH) FOR ENERGY ABSORPTION CAPACITY AT SPEEDS OF 50, 100 AND 150 FT/SEC (STRAIN RATES OF 1,111; 2,222 AND 3,333/SEC) AT VARIOUS TEMPERATURES. TO OBTAIN A BASIS FOR COMPARISON, QUASI-STATIC (INSTRON) TESTS WERE ALSO PERFORMED AT CORRESPONDING TEMPERATURES.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-688 584 1/3 11/79
ARMY NATICK LABS MASS
CONSTRUCTIONAL EFFECTS ON IMPACT BREAKING STRENGTH
OF PARACHUTE SUSPENSION LINES. (U)
DESCRIPTIVE NOTE: MATERIAL EXAMINATION REPT.,
JUN 66 14P FIGUCCIA, F. MCCAFFERTY, L.

UNCLASSIFIED REPORT

DESCRIPTORS: (PARACHUTES, CORDAGE), FIBERS,
NYLON, IMPACT, IMPACT TESTS,
STRAIN (MECHANICS), STRESSES,
FAILURE (MECHANICS), TENSILE PROPERTIES,
ELONGATION, SPECIFICATIONS, EXPERIMENTAL DESIGN (U)
IDENTIFIERS: PARACHUTE SUSPENSION LINES (U)

THIS REPORT INVESTIGATES THE EFFECTS OF STRUCTURE
(YARN PLYING AND BRAIDING) ON THE OVERALL
STRENGTH OF NYLON SUSPENSION LINES (MIL-C-5040B,
TYPE I AND TYPE II) WHEN TESTED AT HIGH
STRAIN RATES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-690 884 11/5 7/4
AMERICAN CYANAMID CO STAMFORD CONN CENTRAL RESEARCH
DIV
A FEASIBILITY STUDY OF CHEMICAL LIGHTING
FORMULATIONS FOR USE ON PARACHUTES. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
MAY 68 20P RAUHUT, MICHAEL A. WEITMAN,
ROBERT H. J.
CONTRACT: N00164-67-C-0411
MONITOR: WAD-CR-1DEP RDTB-153, 157, 40, 00, 00-29-
3

UNCLASSIFIED REPORT

DESCRIPTORS: (1) PARACHUTE FABRICS,
(2) CHEMILUMINESCENCE, FEASIBILITY STUDIES,
TEXTILES, FLUORESCENCE, SUBSTRATES, SOLVENTS,
FREEZING, SPRAYS, LIFE EXPECTANCY, TEMPERATURE,
STORAGE, STABILITY (U)

A NEW CHEMICAL LIGHTING SYSTEM WAS DEVELOPED, WHICH
COMPRISES AN ESSENTIALLY DRY, TREATED FABRIC AND AN
ACTIVATOR FLUID. LIGHT IS PRODUCED BY SPRAYING THE
ACTIVATOR FLUID ON THE TREATED FABRIC. A
BRIGHTNESS ON THE ORDER OF 1 FOOT LAMBERT OR GREATER
IS PROVIDED FOR PERIODS EXCEEDING ONE HALF HOUR.
THE ACTIVATOR FLUID WAS FORMULATED TO REMAIN MOBILE
AT TEMPERATURES AT LEAST AS LOW AS -30F TO PERMIT
ACTIVATION OF THE SYSTEM AT LOW TEMPERATURES. BOTH
COMPONENTS OF THE NEW SYSTEM HAVE SUFFICIENT STORAGE
STABILITY FOR DEMONSTRATION AND FEASIBILITY TESTING
PURPOSES. DESIGN CRITERIA FOR SUBSTRATE CHEMICAL
LIGHTING SYSTEMS DEVELOPED IN THE PROGRAM INDICATE
THAT SUBSTANTIALLY BRIGHTER SYSTEMS CAN BE DEVELOPED.
(AUTHOR) (U)

NOT REPRODUCIBLE

UNCLASSIFIED

JOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AU-693 179 11/5 1/3
WRIGHT AIR DEVELOPMENT CENTER WRIGHT-PATTERSON AFB
OHIO
BRIDLE LINE-PILOT CHUTE, PERSONNEL. (U)
DESCRIPTIVE NOTE: TECHNICAL NOTE,
MAR 55 LIP ENGELH. JRI
REPT. NO. WADC-TN-WCLE-5506
PROJ: AF-6468

UNCLASSIFIED REPORT

DESCRIPTORS: (PARACHUTES, CORDAGE), (CORDAGE,
SAFETY), STRENGTH, DROP TESTING, NYLON (U)

THE PURPOSE OF THE TEST WAS TO SELECT A NEW PILOT
CHUTE BRIDLE LINE DESIGNED TO OPERATE WITHOUT FAILURE
DURING HIGH SPEED PARACHUTE DEPLOYMENT.

(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONCZ

AD-676 644

11/5

2/3

WRIGHT AIR DEVELOPMENT DIV WRIGHT-PATTERSON AFB OHIO
AGING CHARACTERISTICS OF POLYAMIDE FIBROUS MATERIALS
USED IN PERSONNEL DECELERATORS. (U)

DESCRIPTIVE NOTE: TECHNICAL NOTE,

FEB 51

27P

MCGRATH, JOYCE C. :

REPT. NO. WADDU-TN-61-2

UNCLASSIFIED REPORT

DESCRIPTORS: (PARACHUTES, TEXTILES),
(TEXTILES, DEGRADATION), STORAGE, LIFE
EXPECTANCY, PHYSICAL PROPERTIES, CORDAGE, TEST
METHODS, NYLON (U)

IDENTIFIERS: DECELERATORS (U)

A SERVICE LIFE EVALUATION PROGRAM WAS INAUGURATED
IN JANUARY 1957 TO DETERMINE THE BREAKDOWN IF ANY,
OF THE FIBROUS MATERIALS USED IN DECELERATOR
ASSEMBLIES. TEN (10) TYPE T-10 PERSONNEL
DECELERATORS, STORED UNDER NORMAL WAREHOUSE STORAGE
CONDITIONS, WERE OBTAINED FOR THE EVALUATION. THE
DECELERATORS HAD THE OLDEST MANUFACTURING DATES (2-
4 YEARS OLD) AVAILABLE FOR DECELERATORS WHICH HAD
NEVER BEEN USED. EACH YEAR, FOR A PERIOD OF FOUR
YEARS, FIVE DECELERATORS WERE TAKEN AT RANDOM FROM
THE TEN AND SAMPLES OF CLOTH AND SUSPENSION LINES
REMOVED FOR PHYSICAL PROPERTY EVALUATION.
(AUTHOR) (U)

IV. RELEASE MECHANISMS

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 74UN02

AD-632 572 1/3 17/9 1/2 15/7
HARRY DIAMOND LABS WASHINGTON D C
HADOPAD RADAR ACTUATOR DESIGN AND PERFORMANCE. (U)
DESCRIPTIVE NOTE: TECHNICAL MEMO.,
FEB 65 92P ROACH, JOHN J. ; ISEMAN,
MALCOLM L. ;
REPT. NO. TM-66-2.
PROJ: DA-105427030346, HDL-47100

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (RADAR, ACTUATORS), (ACTUATORS,
(PARACHUTES), (AIR DROP OPERATIONS, PARACHUTE
DESCENTS), REMOTE CONTROL SYSTEMS, RADAR EQUIPMENT,
HEIGHT FINDING, DROP TESTING,
PERFORMANCE (ENGINEERING) (U)
IDENTIFIERS: HADOPAD (U)

A LOW-COST RADAR ACTUATOR FOR USE AS A COMPONENT IN
A DELAYED-OPENING PARACHUTE AERIAL-DELIVERY SYSTEM
HAS BEEN DEVELOPED. THIS DEVICE IS KNOWN AS
HADOPAD (HIGH-ALTITUDE DELAYED-OPENING
PARACHUTE ACTUATING DEVICE). THE DEVICE,
BASED ON RADAR PRINCIPLES, WILL OPEN A MAIN RECOVERY
PARACHUTE AT EITHER OF TWO PRESET HEIGHTS (1000 OR
1700 FT) ABOVE THE GROUND. THE COMPLETE SYSTEM
UTILIZES A DROGUE-PARACHUTE STABILIZING STAGE FOR
FREE FALL FROM HIGH ALTITUDE FOLLOWED BY A MAIN-
PARACHUTE RECOVERY STAGE WHICH IS INITIATED AT LOW
ALTITUDE BY THE RADAR ACTUATOR. LIMITED FIELD
TESTING OF THE RADAR ACTUATOR AT FORT DEVENS,
MASS. HAS SHOWN THE FEASIBILITY OF THE DEVICE AS A
PARACHUTE ACTUATOR, BUT SOME ADDITIONAL ENGINEERING
AND COMPLETE ENVIRONMENTAL TESTS ARE NECESSARY BEFORE
INITIATION OF QUANTITY PRODUCTION. FORTY ACTUATORS
WERE CONSTRUCTED BY HDL DURING THE RESEARCH AND
DEVELOPMENT PHASE. (AUTHOR) (U)

NOT REPRODUCIBLE

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDNCZ

AD-647 904- 1/3

ROYAL AIRCRAFT ESTABLISHMENT FARNBOROUGH (ENGLAND)

A METHOD OF INVESTIGATING THE DEPLOYMENT
CHARACTERISTICS OF MAN-CARRYING PARACHUTES.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,

AUG 68 17P JOLLY, A. G. :

REPT. NO. TR-68280

UNCLASSIFIED REPORT

DESCRIPTORS: (PARACHUTES, DEPLOYMENT), MANNED,

TEST METHODS, ACCURACY,

PERFORMANCE (ENGINEERING), GREAT BRITAIN

(U)

TEST RELEASES OF MAN-CARRYING PARACHUTES FROM
BALLOONS, OR AIRCRAFT, DO NOT PERMIT OF ANY DETAILED
EXAMINATION OF THE PROCESSES OF WITHDRAWING THE
RIGGING LINES AND CANOPY FROM THE PACK (I.E.
DEPLOYMENT). IRREGULARITIES DURING THIS PHASE
MAY CAUSE MALFUNCTIONS TO DEVELOP DURING OPENING.
THE METHOD OF TEST DESCRIBED PERMITS EXAMINATION OF
THE DEPLOYMENT FROM THE PARACHUTE PACK AND REVEALS
INFORMATION LACKING IN FLIGHT TESTS. IT IS
PROPOSED THAT THIS TEST METHOD MAY BE USED TO
INVESTIGATE THE BEHAVIOUR OF NEW, OR MODIFIED
PARACHUTE SYSTEMS. (AUTHOR)

(U)

NOT REPRODUCIBLE

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-683 211 1/3

FROST ENGINEERING DEVELOPMENT CORP ENGLEWOOD COLO
DESIGN, DEVELOPMENT, TEST, AND FABRICATION OF
CARGO PARACHUTE RELEASE ASSEMBLY, 12,000-POUND
CAPACITY.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,

DEC 68 71P CRILEY, RONALD L. SMITH,

FOR R. :

CONTRACT: DAAG17-67-C-0197

PROJ: DA-1-F-164204-D-183

TASK: 1-F-164204-D-18368

MONITOR: USA-NLARS TR-68-56-AD

NOT REPRODUCIBLE

UNCLASSIFIED REPORT

DESCRIPTORS: (CARGO PARACHUTES, RELEASE
MECHANISMS), AIR DROP OPERATIONS, DROP TESTING,
DESIGN, WEIGHT, MANUFACTURING METHODS

(U)

A TILT-TYPE CARGO PARACHUTE RELEASE ASSEMBLY HAVING
SUSPENDED CARGO CAPACITY OF 12,000 POUNDS WAS
DEVELOPED. STATIC AND DYNAMIC STRUCTURAL TESTS
PLUS A SERIES OF AIRDROP TESTS WERE CONDUCTED WITH
THREE 12,000-POUND CAPACITY RELEASE FABRICATED FOR
TEST. THESE TESTS DEMONSTRATED THAT THE DEVELOPED
UNITS MET ALL THE DESIGN, PERFORMANCE, AND SERVICE
REQUIREMENTS. (AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-686 504 1/3 13/5
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C
PARACHUTE UNCOUPLING LOCK, (U)
MAR 69 7P PRIVALOV, A. I. IDRYAZGOV,
M. P. IBORISOV, G. N. I
REPT. NO. FSTC-HT-23-1015-68
PROJ: FSTC-9509033A0906, FSTC-92236282301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF PATENT (USSR) 195 897, 4
MAY 67. GULL-10.

DESCRIPTORS: (•PARACHUTES, •LOCKING FASTENER
DEVICES), TIMING DEVICES, PATENTS, SPRINGS,
HOOKS, USSR (U)

IDENTIFIERS: •PARACHUTE UNCOUPLING LOCKS,
TRANSLATIONS (U)

A PARACHUTE UNCOUPLING LOCK IS DESCRIBED,
CONSISTING OF AN ANEROID-TIME MECHANISM; A TRIGGER
APPARATUS WHICH CONTAINS A GUIDE WITH A SPRING-
ACTUATED BUSHING; A DRIVE APPARATUS CONTAINING A
CYLINDRICAL PLUNGER WITH A STOP TOOTH; AND AN
OPERATING MECHANISM EQUIPPED WITH HOOKS FOR ENGAGING
THE EYE RING OF A PARACHUTE, A LEVER TRANSMISSION,
AND A FORK HAVING A STOP GUIDE. IN ORDER TO
HEIGHTEN THE RELIABILITY OF ACTION, IN IT THE TRIGGER
APPARATUS IS EQUIPPED WITH A SPRING-ACTUATED GUIDE
WHICH HAS AT ONE END A PROJECTION UPON WHICH THE END
PLANE OF THE PLUNGER OF THE DRIVE MECHANISM OPERATES,
AND AT THE OTHER END A LUG ATTACHED BY A FORK TO THE
STOP GUIDE OF THE OPERATING MECHANISM.

(AUTHOR)

(U)

UNCLASSIFIED

DUC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-693 173 1379 173
WRIGHT AIR DEVELOPMENT CENTER WRIGHT-PATTERSON AFB
OHIO
PARACHUTE CANOPY RELEASE. (U)
DESCRIPTIVE NOTE: TECHNICAL NOTE,
MAY 54 SP CARROLL, C. E. I
REPT. NO. WADC-TN-WCLE-54-25

UNCLASSIFIED REPORT

DESCRIPTORS: (•PARACHUTES, RELEASE MECHANISMS),
MAINTENANCE, DESIGN, PARACHUTE JUMPING, SAFETY
HARNESSES, LANDINGS, DRAG, REVIEWS (U)
IDENTIFIERS: •PARACHUTE CANOPY RELEASE DEVICES (U)

THE PURPOSE OF THE STUDY WAS TO REVIEW AND RECORD
THE SERVICE REQUIREMENT FOR A PARACHUTE CANOPY
RELEASE DEVICE. (AUTHOR) (U)

UNCLASSIFIED

LDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-693 433 1/3

ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C

MULTI-CANOPY CIRCULAR TYPE PARACHUTE SYSTEM. (U)

SEP 69 7P

REPT. NO. FSTC-HT-23-390-69

PROJ: FSTC-02RL500

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF PATENT (USSR) 199 687, 8
SEP 67.

DESCRIPTORS: (CARGO PARACHUTES, DESIGN),
RELEASE MECHANISMS, CORDAGE,
LOADING MECHANISMS, ALTITUDE, ACTUATORS,
PATENTS

(U)

IDENTIFIERS: TRANSLATIONS

(U)

A PARACHUTE FINAL RELEASE MECHANISM IN WHICH THE
LAST SECTION OF THE LINES ATTACHING THE BASIC SHROUDS
FROM EACH PARACHUTE TO THE LOAD IS KEPT COILED, UNTIL
THE DESIRED ALTITUDE IS REACHED. AT THIS POINT THE
RELEASE MECHANISM PERMITS THESE LINES TO UN COIL TO
THEIR FULL LENGTH. (AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-693 447 1/3
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C
DEVICE FOR RELEASING ACTUATOR CABLE FROM PARACHUTE
ASSEMBLY, (U)
SEP 69 7P GANIN, V. P. ; ZHURAEV, A.
N. ; TRUSIKOV, V. V. ; OPUKHOVSKII, L. Y. ;
REPT. NO. FSTC-HT-23-405-69
PROJ: FSTC-0423100

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF PATENT (USSR) 210 673, 2
APR 68.

DESCRIPTORS: (•PARACHUTES, RELEASE MECHANISMS),
ACTUATORS, AUTOMATIC, CONTROL SYSTEMS, BUSHINGS,
PISTONS, GASKETS, HERMETIC SEALS, BELLAWS, (U)
PATENTS, USSR (U)
IDENTIFIERS: TRANSLATIONS

THE INVENTION DESCRIBES A HERMETICALLY-SEALED
DEVICE EQUIPPED WITH A MOVEABLE PISTON, DESIGNED FOR
USE IN AUTOMATIC PARACHUTE ACTUATION SYSTEMS.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-693 448 1/3
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C
PARACHUTE, (U)
SEP 69 7P LOBANSKY, A. I.
REPT. NO. FSTC-MT-23-406-69
PROJ: FSTC-0423100

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF PATENT (USSR) 207 042,
14 FEB 66.

DESCRIPTORS: (PARACHUTES, DESIGN), VELOCITY,
RELEASE MECHANISMS, DRAG PARACHUTES, BRAKING,
PATENTS, USSR (U)
IDENTIFIERS: TRANSLATIONS (U)

THE INVENTION DESCRIBES AN IMPROVED PARACHUTE
DESIGN WHICH PROVIDES FOR THE RELEASE OF THE
PARACHUTE FROM AIRCRAFT TRAVELING AT HIGHER SPEEDS.
THIS IS ACCOMPLISHED BY MEANS OF DELAYED OPENING OF
THE CANOPY THROUGH THE USE OF A DEVICE AND A BRAKING
PARACHUTE. (AUTHOR) (U)

UNCLASSIFIED

DUC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-293 466

1/3

ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C

PARACHUTE.

SEP 69

6P

LOBANOV, N. A. ;

(U)

REPT. NO. PSTC-HT-23-407-69

PROD. PSTC-0423100

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF PATENT (USSR) 207 040,
14 FEB 66.

DESCRIPTORS: (CARGO PARACHUTES, DESIGN), AIR
DROP OPERATIONS, RELEASE MECHANISMS, CORDAGE,
PATENTS, USSR

(U)

IDENTIFIERS: TRANSLATIONS, PILOT PARACHUTES,
MAIN PARACHUTES, TIME DELAY MECHANISMS,
PARACHUTE CANOPIES

(U)

THE INVENTION DESCRIBES A CARGO PARACHUTE WHICH IS
DESIGNED TO BE RELEASED FROM AIRCRAFT TRAVELLING IN
EXCESS OF 450 KM/H. IN ORDER TO AVOID CARGO AND
PARACHUTE DAMAGE A TIME-DEVICE IS EMPLOYED WHICH
DELAYS OPENING OF THE PARACHUTE BY A PREVIOUSLY
ESTABLISHED TIME INTERVAL. THE TIME-DELAY DEVICE
IS ACTUATED BY A PILOT PARACHUTE. (AUTHOR)

(U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 7ZONC2

AU-694 580 1/3 15/7
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C
A DEVICE FOR DROPPING PARACHUTE MODELS. (U)
SEP 69 9P GLUSHKOV, I. L. BOIKO, G.
D. 1
REPT. NO. FSTC-HT-23-394-69
PROJ. FSTC-0423100

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF PATENT (USSR) 184 629,
15 SEP 66.

DESCRIPTORS: (•AIRMOBILE OPERATIONS, PARACHUTE
DESCENTS), (•PARACHUTES, DROP TESTING), AIR
DROP OPERATIONS, PATENTS, CUTTING, CORDAGE,
RELEASE MECHANISMS, REMOTE CONTROL SYSTEMS, USSR (U)
IDENTIFIERS: TRANSLATIONS (U)

THE PROPOSED DEVICE FOR DROPPING PARACHUTE MODELS
IS DISTINGUISHED BY THE FACT THAT THE CUTTER IS
DESIGNED TO ENCIRCLE THE BRAKING HALYARD WITH
INCANDESCENT FILAMENTS FROM THE POWER SOURCE, WHICH
IS LOCATED IN THE COMMAND STATION. IN ADDITION, AT
THE CENTRAL PART OF THE KNOT OF THE CANOPY, A PIVOT
IS ATTACHED WHICH ELIMINATES TWISTING OF THE BRAKING
HALYARD, RELEASE CORD, AND RETAINING LINE.
(AUTHOR) (U)

NOT REPRODUCIBLE

UNCLASSIFIED

7ZONC2

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-695 DRY 1/3

ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D.
C

A PARACHUTE DEPLOYING APPARATUS,

(U)

SEP 69 6P

REPT. NO. FSTC-MT-23-409-69

PROJ: FSTC-0423100

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF PATENT (USSR) 205 615,
16 FEB 68.

DESCRIPTORS: (•PARACHUTES, RELEASE MECHANISMS),
PATENTS, CORDAGE, DEPLOYMENT, SUPPORTS, USSR

(U)

IDENTIFIERS: •PARACHUTE DEPLOYING MECHANISMS,
TRANSLATIONS

(U)

AN INDIVIDUAL PARACHUTE DEPLOYING APPARATUS IS
DESCRIBED. THE APPARATUS IS LENGTHENED BY A FABRIC
BELT WHICH IS TO BE CAUGHT BY THE AIRSTREAM DRAWING
THE PARACHUTE AWAY FROM THE EDGE OF THE DOOR OF THE
AIRCRAFT. (AUTHOR)

(U)

NOT REPRODUCIBLE

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-695 361 1/3
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C
CATCH FOR UNCOUPLING FREE ENDS OF A PARACHUTE. (U)
SEP 69 6P
REPT. NO. FSTC-HT-23-392-69
PROJ: FSTC-0423-100

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF PATENT (USSR) 190 797,
15 FEB 67.

DESCRIPTORS: (•PARACHUTES, LANDINGS),
(•LANDINGS, RELEASE MECHANISMS), PATENTS.

USSR

(U)

IDENTIFIERS: TRANSLATIONS

(U)

A MORE RELIABLE MECHANISM FOR RELEASING A PARACHUTE
AFTER LANDING IS DESCRIBED. THE MECHANISM WILL NOT
LOCK UP UNDER LOADS UP TO 400 KILOGRAMS.
(AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-695 957 1/3
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C
PARACHUTE SYSTEM, (U)
JUN 69 6P TKACHEV, F. D. :
REF: NO. FSTC-HT-23-389-69
PROJ: FSTC-99170030906; FSTC-92236262301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF PATENT (USSR) 213 595,
21 MAY 66.

DESCRIPTORS: (CARGO PARACHUTES, RELEASE
MECHANISMS), PATENTS, CORDAGE, CUTTING, DRAG
PARACHUTES: USSR (U)
IDENTIFIERS: TRANSLATIONS (U)

A PARACHUTE SYSTEM IS DESCRIBED CONSISTING OF A
RELEASE PARACHUTE, A MAIN PARACHUTE, THE CANOPY OF
WHICH IS HELD CLOSED BY A CIRCULAR REEFING SHROUD,
PASSING THROUGH HOLES WITH METAL EYES DISTRIBUTED
AROUND THE PERIMETER OF THE CANOPY, AND HELD BY A
RELEASING DEVICE, CONNECTED WITH THE RELEASE
PARACHUTE AND WITH AN UNFURLING MECHANISM SET UP ON
THE CANOPY. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AU-696 225 1/2 13/5 14/2
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C
AUTOMATIC UNCOUPLER-INCLINOMETER, (U)
69 5P KACHALKOV, V. V. ;
VENTSEKOSTSEV, V. N. ;
REPT. NO. FSTC-HT-23-404-69

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF PATENT (USSR) 142
1560

DESCRIPTORS: (*CARGO PARACHUTES, LANDINGS),
(*CABLE ASSEMBLIES, DEFLECTION), (*DISCONNECT
FITTINGS, TEST METHODS), PATENTS, PARACHUTE
DESCENTS, CARGO, AUTOMATIC, STRUCTURAL PARTS,
OPERATION, USSR (U)
IDENTIFIERS: INCLINOMETERS, TRANSLATIONS,
*AUTOMATIC UNCOUPLERS, ANGLE OF DEFLECTION,
PARACHUTE CANOPIES (U)

AN AUTOMATIC UNCOUPLER-INCLINOMETER IS DESCRIBED
FOR DISENGAGING THE PARACHUTE SYSTEM FROM THE DROPPED
LOAD UPON LANDING, CONSISTING OF A CYLINDRICAL BODY
WITH A LUG FOR ATTACHING THE LEVER-CLAMPS OF THE
CLAMPING DEVICE AND BRAKING BUSHINGS WITH A LUG OF
THE LOAD SUSPENSION. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /20NC2

AD-851 110 13/5 1/3
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C
LATCH FOR THE EXTRACTION-FORCE TRANSFER
DEVICE OF A CARGO PARACHUTE SYSTEM, (U)
MAR 69 6P SKULANOV, B. S. ; PANTSEV, V.
A. IMODIN, P. I. I
REF1: NO: FSTC-HT-23-1016-r8
PROJ: FSTC-92236282301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF PATENT (USSR) 190 794,
29 DEC 66.

DESCRIPTORS: (CARGO PARACHUTES, RELEASE
MECHANISMS), (PINS(MECHANICAL), PATENTS),
STRUCTURAL PARTS, FASTENINGS, SPRINGS, DESIGN,
PATENTS, LOCKING FASTENER DEVICES, USSR, PATENTS (U)
IDENTIFIERS: TRANSLATIONS (U)

THE INVENTION APPLIES TO THE LATCHES OF EXTRACTION
PARACHUTES IN CARGO PARACHUTE SYSTEMS, THESE LATCHES
BEING INTENDED FOR FASTENING OF THE CARGO PLATFORM TO
THE FLOOR OF THE AIRCRAFT, FOR PULLING OF THE
PLATFORM OUT OF THE AIRCRAFT, AND FOR DISCONNECTION
OF THE EXTRACTION PARACHUTE. THE PECULIARITY OF
THE PROPOSED LATCH CONSISTS IN THE FACT THAT THE LIFT
LEVER OF THE PIN IS SET UP ON AN AXLE FIXED INTO THE
CASE OF THE LATCH AT BOTH ENDS, WHEREBY
INSEPARABILITY OF THE LEVER FROM THE LATCH IS BROUGHT
ABOUT. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-651 610 1/3
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C
PARACHUTE PULL-OUT APPARATUS (U)
MR 59 6P BALAKIREVA, K. P.; KADYSHEV,
I. L.; KHATYTSIN, E. YA.; PUGACHOV, V. B.;
STEPANENKO, I. S.;
REPT. NO. FSTC-HT-23-1021-68
PROJ. FSTC-9509033A0906, FSTC-92236262301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF PATENT (USSR) 205 615,
13 NOV 67.

DESCRIPTORS: (PARACHUTES; RELEASE MECHANISMS),
STABILIZATION SYSTEMS, CORDAGE, TEXTILES,
AERODYNAMIC CHARACTERISTICS, SUPPORTS, USSR,
PATENTS (U)

IDENTIFIERS: PARACHUTE PULL OUT APPARATUS,
TRANSLATIONS, PARACHUTE CANOPIES (U)

A DESCRIPTION IS GIVEN OF A PROPOSED PARACHUTE
PULL-OUT APPARATUS DESIGNED TO AVOID IRREGULAR
MOVEMENT OF THE PARACHUTIST AS THE CANOPY OF THE
STABILIZING PARACHUTE IS FILLED, WHICH MAY LEAD TO
TANGLING OF THE PARACHUTE. IN ORDER TO KEEP THE
PARACHUTE AS HIGH AND AS DISTANT AS POSSIBLE FROM THE
AIRCRAFT, THE PULL-OUT CORD IS EQUIPPED WITH A HOLD-
UP ELEMENT IN THE FORM OF A STRIP OF NOVE. MATERIAL.
(AUTHOR) (U)

V. JUMPING

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-615 534

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
THE DYNAMICS OF EMOTIONAL-VOLITIONAL PROCESSES DURING
PARACHUTE JUMPS BY ASTRONAUTS, (U)
MAY 65 17P KHLEBNIKOV, G. F. ILEBED, V. V.

I. I

REPT. NO. FTD-TT-65-437

MONITOR: TT , 65-62301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF
VOПРОSЫ ПСИХОЛОГИИ (USSR) VIO NS P3-10 1964.

DESCRIPTORS: (ASTRONAUTS, PARACHUTE JUMPING),
(PARACHUTE JUMPING, ASTRONAUTS), PSYCHOPHYSIOLOGY,
TRAINING, EMOTIONS, ELECTROCARDIOGRAPHY, PULSE RATE,
PERFORMANCE (HUMAN), BEHAVIOR, USSR (U)

SOVIET COSMONAUTS WERE OBSERVED DURING THEIR
PRELIMINARY PARACHUTE JUMPING TRAININGS. BEFORE
EMPLANING, IN THE PLANE AND AFTER LANDING, THE HEART-
RATE WAS MEASURED AND THE DYNAMOMETRY OF HANDS WAS
CARRIED OUT AS WELL. THE REGISTRATION OF CHANGES OF
HANDS' STRENGTH AND THOSE OF THE HEART-RATE DISCLOSED
THE DYNAMICS OF THE EMOTIONAL 'TUNING' OF COSMONAUTS
TO THE COMING PARACHUTE JUMPINGS. ON THE FIRST DAY
OF PARACHUTE JUMPING THE EMOTIONAL REACTIONS WERE
SIGNIFICANT AND WERE MARKEDLY DIFFERENT FROM
EMOTIONAL REACTIONS OF WELL-TRAINED PARACHUTISTS.
SUBSEQUENTLY, THE REACTIONS BECAME MORE ADEQUATE
AND DUE TO THE TRAINING OF VOLITIVE PROCESSES THE
EMOTIONAL MANIFESTATION AT THE REPEATED PARACHUTE
JUMPINGS BECAME WEAK. THE EMOTIONAL REACTIONS TO
DANGER ARE CHARACTERIZED BY 'STHENIC' EXCITATION
WHICH IS EVOKED BY THE ACTIVATION OF THE CONSCIOUS
REGULATION OF BEHAVIOR. ALL COSMONAUTS HAD THE
MOST STABLE POSITIVE EMOTIONS AT THE SECOND STAGE OF
PARACHUTE JUMPING TRAININGS (JUMPING ONTO THE
WATER, DURING NIGHTS, IN THE DIVING SUITS). (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONCZ

AD-616 943

ARMED FORCES INST OF PATHOLOGY WASHINGTON D C
SURVEY OF MILITARY SPORT PARACHUTING DEATHS.

(U)

65 3P KIEL, FRANK W. I

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PUB. IN AEROSPACE MEDICINE 36 N4
P361-2 APR 1965 (COPIES NOT AVAILABLE TO DDC OR
CLEARINGHOUSE CUSTOMERS).

DESCRIPTORS: (AVIATION ACCIDENTS, PARACHUTE
JUMPING), (PARACHUTE JUMPING, ACCIDENTS),
SOURCES, PARACHUTES, MALFUNCTIONS, HAZARDS,
RECREATION, ANALYSIS, INJURIES, IMPACT SHOCK,
TRAINING, WIND

(U)

IDENTIFIERS: DEATH

(U)

SPORT PARACHUTING HAS BECOME A POPULAR ACTIVITY
WITH MILITARY PERSONNEL, AND MANY CLUBS HAVE BEEN
ORGANIZED AND SPONSORED ON BASES THROUGHOUT THE
WORLD. AS THE NUMBER OF JUMPERS HAS INCREASED SO
HAS THE NUMBER OF DEATHS INCREASED. THERE HAVE
BEEN 27 MILITARY PERSONS KILLED IN SPORT PARACHUTING
THROUGH JUNE 1964. IN ADDITION TO THE LARGE
PROBLEM OF FAILURE TO ACTIVATE THE PARACHUTE THERE
ARE OTHER HAZARDS ALSO, SUCH AS HITTING THE AIRPLANE,
COLLIDING WITH ANOTHER JUMPER, MALFUNCTIONING OF THE
CHUTE AND LANDING IN THE WATER. ANALYSIS OF THE
ACCIDENTS SHOWS THAT ONE-THIRD OCCURRED DURING THE
PRELIMINARY TRAINING PERIOD BUT IN OTHERS JUMPERS
WITH LONG EXPERIENCE HAVE DIED ALSO. WIND APPEARS
TO BE A FACTOR IN INADVERTENT WATER LANDINGS, BUT
OTHER WEATHER FACTORS LACK IMPORTANCE. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONCZ

AD-619 013

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
WORKING DAY OF A SPACE PIONEER, YA. G. GAGARIN RE-
ENTERS SPACE TRAINING, (U)

MAR 64 6P BELIKOV, V. I

REPT. NO. FTD-TT-64-149

MONITOR: TT 64-15397

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. FROM
IZVESTIYA (USSR) 9 AUG 64 1963.

DESCRIPTORS: (•)ASTRONAUTS, USSR; PARACHUTE JUMPING,
TRAINING (U)

PARACHUTE JUMPING BY RUSSIAN COSMONAUT, Y. GAGARIN.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC4

AD-617 389

BUREAU OF SOCIAL SCIENCE RESEARCH INC WASHINGTON D C
FEAR AND ENTHUSIASM IN SPORT PARACHUTING. (U)

MAY 65 35P KLAUSNER, SAMUEL Z. I

CONTRACT: AF49 638 992

MONITOR: AFOSR , 65-1329

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR INCLUSION IN
MOTIVATIONS IN SPORTS BY RALPH SLOVENKO AND JAMES
A. KNIGHT TO BE PUBLISHED BY CHARLES C. THOMAS,
SPRINGFIELD, ILLINOIS.

DESCRIPTORS: (*PARACHUTE JUMPING, RECREATION),
(*FEAR, PARACHUTE JUMPING), EMOTIONS, MOTIVATION,
ATTITUDES, PERSONALITY, PSYCHOMETRICS, SOCIAL
SCIENCES, ANALYSIS OF VARIANCE, STATISTICAL DATA (U)

REPLIES TO A MAIL QUESTIONNAIRE BY 825 SPORT
PARACHUTISTS AFFILIATED WITH 103 PARACHUTE CLUBS ARE
THE DATA OF THIS STUDY. QUESTIONNAIRES WERE
ADMINISTERED BY OFFICIALS OF THE INDIVIDUAL CLUBS AND
ASKED ABOUT THE EXPERIENCE OF FEAR AND ENTHUSIASM,
PERSONAL AND SOCIAL CHARACTERISTICS OF THE
PARACHUTISTS, ATTITUDES RELEVANT TO SPORT
PARACHUTING, AND INCLUDED THE MA AND HY SCALES
FROM THE MMPI, A DRAW-A-PERSON TEST, AND
FOUR STORYSTIMULUS PICTURES OF PARACHUTING
SITUATIONS. ONLY THE JUMP EXPERIENCE, AN ANALYSIS
OF THE STORIES TOLD ABOUT ONE PICTURE, AND A FEW
SOCIAL CHARACTERISTICS ARE REPORTED IN THIS PAPER. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 740NC2

AD-620 370

NAVAL SCHOOL OF AVIATION MEDICINE PENSACOLA FL
COMPARISON OF DIFFERENT TYPES OF PARACHUTE HARNESS
WITH PARTICULAR REFERENCE TO EASE OF RELEASE. (U)

DESCRIPTIVE NOTE: RESEARCH REPT.,

20P

GEMMILL, C. L. ; STILWELL, S. C. ;

DIETZ, M. D. ; RILEY, R. L. ; ZWIERLEIN, T. J. ;

REPT. NO. NSAM-766

MONITOR: NAVMED ,

X-292 (AV-168-U)

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SUPPLEMENTARY NOTE: AVAILABLE COPY WILL NOT PERMIT FULLY
LEGIBLE REPRODUCTION. REPRODUCTION WILL BE MADE IF
REQUESTED BY USERS OF DDC. COPY IS AVAILABLE FOR PUBLIC
SALE.

DESCRIPTORS: (•PARACHUTES, SAFETY HARNESS),
(•DISCONNECT FITTING, PARACHUTES), TESTS,
SIMULATION, ENVIRONMENTAL TESTS, AVIATION SAFETY,
RELEASE MECHANISMS (U)

THE U. S. NAVY TYPE AND THE BRITISH "QUICK
RELEASE" TYPE OF PARACHUTE HARNESS WERE TESTED WITH
RESPECT TO THE EASE AND SPEED OF RELEASE UNDER THE
FOLLOWING CONDITIONS: (1) ON LAND UNDER GOOD
CONDITIONS. (2) ON LAND IN SIMULATED BAD
WEATHER: (A) IN HIGH WIND, (B) WITH WET
HANDS AND HARNESS, (C) AT 0 F, (D) WITH
HEAVY FLYING MITTENS. (3) IN THE WATER AND
SUSPENDED ABOVE THE WATER: (A) IN THE WATER,
(B) SUSPENDED 8 FT. ABOVE WATER, (C) IN THE
WATER; LIFE JACKET INFLATED. (4) USING ONE
HAND: (A) DRY, (B) WITH WET HANDS AND
HARNESS. TWO EXAMPLES OF ACCIDENTAL JAMMING ARE
DISCUSSED AND THE SUBJECT OF ACCIDENTAL RELEASE IS
CONSIDERED. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-623 622

ARMED FORCES INST OF PATHOLOGY WASHINGTON D C
PARACHUTING FOR SPORT,

65 5P KIEL, FRANK W. ;

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PUB. IN JOURNAL OF AMERICAN
MEDICAL ASSOCIATION V194 P264-8 OCT 18 1965 (COPIES
NOT AVAILABLE TO DDC OR CLEARINGHOUSE CUSTOMERS).

DESCRIPTORS: (PARACHUTE JUMPING, RECREATION),
(ACCIDENTS, PARACHUTE JUMPING), SURVIVAL,
TRAINING, WOUNDS - INJURIES

(U)

PARACHUTING HAS EXISTED FOR 180 YEARS BUT HAS
GAINED MANY ADHERENTS ONLY IN RECENT YEARS. SPORT
PARACHUTING IS ESTIMATED TO HAVE 50,000 PARTICIPANTS
IN 1964. ALTHOUGH PARACHUTING IS A POTENTIALLY
DANGEROUS ACTIVITY, FATALITIES ARE RARE-APPROXIMATELY
1 IN 17,000 JUMPS. FATALITIES, THOUGH USUALLY
THOUGHT OF AS THE RESULT OF MULTIPLE EXTREME INJURIES
SUSTAINED IN ABRUPT GROUND DECELERATION, HAVE MANY
OTHER CAUSES. AMONG THESE CAUSES OF DEATH HAVE
BEEN COLLISION OF JUMPERS, LANDING ON A POWER LINE,
HEART ATTACK DURING DESCENT, AND DROWNING. MAJOR
FACTORS BEHIND MANY OF THESE ACCIDENTS HAVE BEEN
(1) LACK OF PROPER REPETITIVE TRAINING BY
QUALIFIED INSTRUCTORS AND (2) LACK OF ADEQUATE
SUPERVISION, PARTICULARLY OF STUDENTS. ANALYSIS OF
THE ACCIDENTS HAS SHOWN THAT ONE THIRD OCCURRED
DURING THE PRELIMINARY TRAINING PERIOD, BUT IN
OTHERS, JUMPERS WITH LONG EXPERIENCE HAVE DIED ALSO.
TEMPERATURE, CLOUD CONDITIONS, AND WIND HAVE NOT
BEEN SHOWN TO BE MAJOR FACTORS. A FEW MINACULOUS
ESCAPES ARE KNOWN IN PARACHUTING-SURVIVAL OF A FALL
FROM GREAT HEIGHT WITHOUT THE AID OF A PARACHUTE.
SUCH EVENTS USUALLY HAVE THE BENEFIT OF A LONG
DECELERATIVE INTERVAL BECAUSE OF LANDING IN PLOWED
FIELDS OR TREES AND AN OPTIMAL DIFFUSION OF BODY
IMPACT, AS IN LANDING ON THE BACK IN A SPREAD-EAGLE
POSITION. (AUTHOR)

(U)

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AD-630 466

6/7

6/14

NAVAL AVIATION SAFETY CENTER NORFOLK VA

BODY-BUILD AND SURVIVAL IN EJECTIONS FROM NAVY
AIRCRAFT

(U)

65

10P

LODGE, GEORGE T. :

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SURVIVAL, PHYSICAL FITNESS),
(*PARACHUTE JUMPING, SURVIVAL), (*ANTHROPOMETRY,
SURVIVAL), AVIATION ACCIDENTS, NAVAL AIRCRAFT,
ESCAPE SYSTEMS(AEROSPACE), EJECTION, PILOTS

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONCZ

AD-630 793 5/10 5/11
BUREAU OF SOCIAL SCIENCE RESEARCH INC WASHINGTON D C
WORSHIP AND THE DANGEROUS LIFE: A STUDY OF CHURCH
ATTENDANCE AMONG SPORT PARACHUTISTS. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT., 1963-1965,
DEC 65 55P KLAUSNER, SAMUEL Z. I
CONTRACT: AF 49(638)-1510,
PROJ: AF-9779,
TASK: 977901,
MONITOR: AFOSR , 66-0124

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•RELIGION, PSYCHOLOGY), (•PARACHUTE
JUMPING, RELIGION), RECREATION, EMOTIONS, FEAR,
MOTIVATION, BEHAVIOR, ANXIETY, ATTITUDES,
PERSONALITY, PROJECTIVE TECHNIQUES,
REACTION(PSYCHOLOGY), ANALYSIS OF VARIANCE,
STATISTICAL ANALYSIS, SOCIAL SCIENCES (U)

THE DATA FOR THIS STUDY WERE DRAWN FROM 825
QUESTIONNAIRES RETURNED BY MEMBERS OF AMERICAN
SPORT PARACHUTING CLUBS. AMONG PROTESTANT
PARACHUTISTS, THE EMOTIONALLY VOLATILE ARE MORE
FREQUENT CHURCH ATTENDERS THAN THE RELATIVELY CALM.
AMONG CATHOLICS THE REVERSE IS TRUE: THE CALMER
TYPES GO TO CHURCH WHILE THE MORE VOLATILE TEND TO
STAY AWAY. SKYDIVERS WHO AVOID THINKING ABOUT
THEIR FEAR OF JUMPING ARE, ESPECIALLY AMONG
PROTESTANTS, MORE FREQUENT CHURCH ATTENDERS THAN
THOSE SKYDIVERS WHO EXPRESS THEIR FEAR. CATHOLICS
WHO EXPRESS THE FEELING OF FREE FALL IN SENSORY AND
ESTHETIC TERMS ARE MORE FREQUENT CHURCH ATTENDERS
THAN THE CATHOLICS WHO CONFRONT THIS EXPERIENCE IN
A SIMPLE, DESCRIPTIVE, MATTER-OF-FACT WAY.
PROTESTANTS WHO GRASP THE FREE FALL EXPERIENCE IN A
MATTER-OF-FACT WAY WERE MORE FREQUENT WORSHIPPERS IN
THEIR CHURCHES THAN THOSE PROTESTANTS FOR WHOM FREE
FALL IS AN ESTHETIC OR SENSORY EXPERIENCE.
PROTESTANTS WHO FELT THAT HARM BEFALLING A SKYDIVER
WAS DUE TO FATE--THAT IS, PREDESTINED OR DETERMINED,
RATHER THAN A RESULT OF THE JUMPER'S IRRESPONSIBLE
BEHAVIOR, ARE MORE FREQUENT CHURCH ATTENDERS.
CATHOLICS FOR WHOM SKYDIVER INJURY IS DUE TO HIS
OWN RESPONSIBILITY ARE MORE LIKELY THAN FATALIST
CATHOLICS TO BE FREQUENT ATTENDERS AT MASS.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 720HC2

AD-631 019 5/11 5/10

BUREAU OF SOCIAL SCIENCE RESEARCH INC WASHINGTON D C
THE IMPACT OF THE MEANS OF RECRUITMENT ON PERFORMANCE
IN A DANGEROUS SPORT: SOCIAL, ENTHUSIASTIC AND
EXHIBITIONIST SKYDIVERS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT., 1963-1966.

JAN 66 32P KLAUSNER, SAMUEL Z. I

CONTRACT: AF 49(638)-1510.

PROJ: AF-9779.

TASK: 977901.

MONITOR: AFOSR , 66-0122

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (PARACHUTE JUMPING, MOTIVATION),
SOCIAL COMMUNICATION, READING, TELEVISION
COMMUNICATION SYSTEMS, RECREATION, ATTITUDES,
DECISION MAKING, PERSONALITY, PSYCHOMETRICS,
ANXIETY, SOCIAL SCIENCES (U)

IDENTIFIERS: PERSUASIVE COMMUNICATIONS. (U)

MANY SKYDIVERS ARE RECRUITED BY FRIENDS; RELATIVELY
FEW ARE RECRUITED THROUGH THE MASS MEDIA. WRITTEN
MATERIALS ARE LIKELY TO ATTRACT OLDER AND MORE
EDUCATED INDIVIDUALS TO THE SPORT. INDIVIDUALS
RECRUITED BY THEIR FRIENDS TEND TO PLACE THE SOCIAL
GROUP AHEAD OF THE SPORT AND MAY SHIFT TO ANOTHER
SPORT RATHER THAN CHANGE THEIR GROUP WHEN FACED WITH
A CHOICE. THOSE WHO ARE RECRUITED THROUGH WRITTEN
MATERIALS TEND TO BE MORE ACTIVE AND ENTHUSIASTIC
SKYDIVERS. THOSE RECRUITED THROUGH TELEVISION ARE
MORE INTERESTED IN THE EXHIBITIONISTIC ASPECTS OF
SKYLIVING AND, IN THEIR PERSONALITIES, TEND TO BE
MORE PASSIVE. THOSE RECRUITED BY FRIENDS ARE MORE
LIKELY TO BE 'LOCALS', CONCERNED WITH THE ACTIVITY OF
THEIR IMMEDIATE SKYDIVING GROUP, WHILE THOSE
RECRUITED THROUGH THE MASS MEDIA ARE MORE LIKELY TO
BE 'COSMOPOLITANS', CONCERNED WITH NATIONAL ASPECTS
OF SKYDIVING. (AUTHOR) (U)

UNCLASSIFIED

720HC2

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 74GNC2

AD-631 J20 5/11 5/10

BUREAU OF SOCIAL SCIENCE RESEARCH INC WASHINGTON D C
THE TRANSFORMATION OF FEAR. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT., 1963-1966.

JAN 66 41P KLAUSNER, SAMUEL Z. ;

CONTRACT: AF 49(638)-1510,

PROJ: AF-9779,

TASK: 977901,

MONITOR: AFOSR , 66-0123

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (PARACHUTE JUMPING, FEAR), ANXIETY,
MOTIVATION, EMOTIONS, STRESS (PSYCHOLOGY),
BEHAVIOR, ATTITUDES, PERSONALITY,
PSYCHOMETRICS, RECREATION, CORRELATION
TECHNIQUES, SOCIAL SCIENCES (U)

HYPOTHESIS: (1) FEAR AND ENTHUSIASM ARE
NEGATIVELY CORRELATED COMPONENTS OF AFFECTUAL
EXCITEMENT; (2) IN ACTING DESPITE FEAR, FEAR IS
TRANSFORMED INTO ENTHUSIASM (THE AFFECTUAL VALENCE
SHIFT FROM NEGATIVE TO POSITIVE); I.E., FEAR AT ONE
POINT IS POSITIVELY CORRELATED WITH ENTHUSIASM AT A
LATER POINT IN THE ACT. A SAMPLE OF 825 AMERICAN
SPORT PARACHUTISTS INDICATED THE DEGREES OF FEAR AND
ENTHUSIASM EXPERIENCED DURING THEIR FIRST JUMP. THE
DATA WERE EXAMINED BY REGRESSION ANALYSIS OF THE FEAR
AND ENTHUSIASM SCORES. DURING THE JUMP PREPARATION
BOTH FEAR AND ENTHUSIASM INCREASE. AT THE START OF
THE JUMP RUN, FEAR DECREASES AND ENTHUSIASM
INCREASES. A NADIR AND ZENITH, RESPECTIVELY, ARE
REACHED WHEN THE PARACHUTE IS OPENED. FEAR AGAIN
INCREASES AND ENTHUSIASM DECREASES NEAR LANDING.
UPON TOUCHING THE GROUND, FEAR DROPS TO A NEW NADIR
AND ENTHUSIASM RISES TO A ZENITH ABOVE THE FIRST.
THE MEAN SCORES FOR FEAR AND FOR ENTHUSIASM AT
SUCCESSIVE POINTS DURING THE JUMP ARE NEGATIVELY
CORRELATED. AT SINGLE POINTS, INDIVIDUAL FEAR AND
ENTHUSIASM SCORES ARE ALSO NEGATIVELY CORRELATED.
THESE FINDINGS SUPPORT THE FIRST HYPOTHESIS. THE
INDIVIDUAL FEAR SCORES AT THE FIRST ZENITH OF FEAR
ARE LESS NEGATIVELY AND THEN MORE POSITIVELY
CORRELATED WITH INDIVIDUAL ENTHUSIASM AT SUCCESSIVE
SUBSEQUENT POINTS; THIS FINDING SUPPORTS THE SECOND
HYPOTHESIS. A DEVIANT CASE ANALYSIS SHOWED THAT
THOSE WHO TRANSFORM THEIR FEAR INTO A RELATIVELY
GREAT AMOUNT OF ENTHUSIASM TEND TO BE INDEPENDENT,
ENERGETIC PERSONALITIES, WHILE THOSE WHO FAIL,
RELATIVELY, TO TRANSFORM THE FEAR INTO ENTHUSIASM (U)

76
UNCLASSIFIED

74GNC2

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-631 049 5/11 5/10
BUREAU OF SOCIAL SCIENCE RESEARCH INC WASHINGTON D C
VOLUNTEERS FOR A HIGH RISK SPORT. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT., 1963-1966.
JAN 66 49P KLAUSNER, SAMUEL Z. J.
CONTRACT: AF 4. (638)-1510,
PROJ: AF-9779,
TASK: 977901,
MONITOR: AFOSR , 66-0121

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•PARACHUTE JUMPING, RECREATION),
UNITED STATES, DISTRIBUTION, ATTITUDES, PUBLIC
OPINION, NEWSPAPERS, ANXIETY, MOTIVATION,
PERSONALITY, FEAR, SOCIAL SCIENCES, STATISTICAL
DATA (U)
IDENTIFIERS: VOLUNTEERS (U)

SPORT PARACHUTISTS TEND TO BE OVER-REPRESENTED IN
THE WESTERN REGION OF THE UNITED STATES.
THEY ARE, BY AND LARGE, RELATIVELY YOUNG MALES WHO
LOOK UPON THE SPORT AS A MASCULINE EXPRESSION. THE
SPORT IS OBJECTIVELY DANGEROUS, AS MEASURED BY THE
ACCIDENT RATE, AND IS SUBJECTIVELY PERCEIVED AS SUCH.
SPORT PARACHUTISTS TEND TO BE SINGLE-MINDED IN
THEIR ATTITUDE TO THE SPORT, SOMETIMES GIVING IT
PRIORITY OVER THEIR COMMITMENT TO FAMILY ROLES.
PRESS REPORTAGE EMPHASIZES THE SPECTACULAR AND
EXHIBITIONISTIC ASPECTS OF PARACHUTING RATHER THAN
ITS COMPETITIVE SPORT ASPECTS. NEWSPAPERS SEE THE
ACTIVITY AS EXHIBITING FUN AND 'GUTS' AND AS
DANGEROUS. (AUTHOR) (U)

77

UNCLASSIFIED

/ZONC2

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC4

AD-633 630 1/2

ARMY AEROMEDICAL RESEARCH UNIT FORT RUCKER ALA
EXPECTED INJURY RATES FOR EXPERIMENTAL AIRBORNE
OPERATIONS,

(U)

JUN 66 13P AVNER, R. A. I

REPT. NO. USAARU-66-7,

PROJ: DA-3AD-2560-1A-815,

TASK: U36,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*PARACHUTE JUMPING, AVIATION
INJURIES), (*AVIATION INJURIES, MATHEMATICAL
PREDICTION), PROBABILITY, CASUALTIES,
EXPERIMENTAL DESIGN, STATISTICAL ANALYSIS, ARMY
PERSONNEL

(U)

PROBABILITY OF INJURY FOR ARMY PARATROOPERS UNDER
CONDITIONS OF FULL COMBAT LOAD AND UNPREPARED DROP
ZONE WAS ESTIMATED TO BE .006 (STANDARD ERROR =
.002, N = 5,253). TABLES WERE COMPUTED TO ALLOW
TESTS OF DEPARTURE FROM THIS RATE UNDER EXPERIMENTAL
CONDITIONS INVOLVING UP TO 50 JUMPERS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-634 342 5/9 1/2 6/19
ARMY AEROMEDICAL RESEARCH UNIT FORT RUCKER ALA
PHYSIOLOGICAL TRAINING OF HALO PARACHUTISTS. (U)
SEP 66 23P SCHANE, P. I
REPT. NO. USAAR-67-2,
PROJ: DA-3-A-025601-A-819
TASK: 3-A-025601-A-81903

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTES:

DESCRIPTORS: (•PARACHUTE JUMPING, •TRAINING), HIGH
ALTITUDE, STRESS(PHYSIOLOGY), AVIATION MEDICINE (U)
IDENTIFIERS: HALO PARACHUTISTS (U)

THE REPORT REVIEWS THE ENVIRONMENT IN WHICH A HALO
PARACHUTIST OPERATES, INDICATES SOME AREAS IN
TRAINING WHICH DESERVE SPECIAL ATTENTION, AND MAKES
SOME SPECIFIC OPERATIONAL RECOMMENDATIONS WHICH, IF
ADOPTED, WOULD REDUCE THE POSSIBILITY OF INJURY OR
DISEASE CAUSED BY THE MAN-ENVIRONMENT INTERACTION.
(AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 740NC2

AD-650 369 5/10 5/11
BUREAU OF SOCIAL SCIENCE RESEARCH INC WASHINGTON D C
THE PASSION FOR SKYDIVING, (U)
MAR 67 140P KLAUSNER, SAMUEL Z. I
CONTRACT: AF 49(638)-1510
PROJ: AF-977Y
TASK: 977901
MONITOR: AFOSR 67-0392

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-630 793, AD-631 019,
AD-631 020, AND AD-631 049.

DESCRIPTORS: (*PARACHUTE JUMPING, *FEAR),
RECREATION, ANXIETY, PERSONALITY, PROJECTIVE
TECHNIQUES, PERSONALITY TESTS, EMOTIONS, GROUP
DYNAMICS, ATTITUDES, SOCIAL PSYCHOLOGY, BEHAVIOR,
QUESTIONNAIRES, DEFENSE MECHANISMS (PSYCHOLOGY) (U)

THE REPORT IS COMPOSED OF SIX PAPERS ON THE
EMOTIONAL ASPECTS OF SPORT PARACHUTING AND ITS
MEANING FOR THE SELF-EVALUATION OF THE INDIVIDUAL.
SOME MECHANISMS SKYDIVERS EMPLOY TO MANAGE THE
FEARFUL COMPONENT OF THE SKYDIVING EMOTION, AND
MECHANISMS ENABLING THEM TO ACT DESPITE IT, ARE
DISCUSSED. THE FIRST PAPER EXAMINES SOME EMOTIONAL
QUALITIES WHICH SKYDIVERS ASSOCIATE WITH FREE FALL.
THE SECOND PAPER ATTEMPTS TO ASSESS THE IMPACT OF
THE ACT OF PARACHUTING ON THE SKYDIVER'S EVALUATION
OF HIMSELF. THE THIRD PAPER EXAMINES SOME OF THE
CONDITIONS UNDER WHICH AN INDIVIDUAL WILL RECOGNIZE
OR FAIL TO RECOGNIZE HIS FEAR. THE FOURTH PAPER
STUDIES FEAR OF FAILURE AS ONE SIGNIFICANT SOURCE OF
FEAR. THE FIFTH PAPER DEALS WITH SOME RATIONAL AND
NONRATIONAL MECHANISMS FOR MANAGING BEHAVIOR, AND THE
LAST PAPER DESCRIBES SOME DIFFERENCES BETWEEN
SKYDIVERS WHO ADOPT AN ATTITUDE OF FATALISM OR OF
EFFECTIVISM TOWARD THE OUTCOME OF SKYDIVING.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONCZ

AD-653 598 6/19

ARMY AEROMEDICAL RESEARCH UNIT FORT RUCKER ALA
CONTINUOUS EKG RECORDING DURING FREE-FALL
PARACHUTING.

(U)

JUN 67 32P SCHANE, R. P. ISLINDE,

KENNETH E. I

REPT. NO. USAARU-67-7

PROJ: DA-3A02560-1A-619

TASK: U36

UNCLASSIFIED REPORT

DESCRIPTORS: (PARACHUTE JUMPING,
ELECTROCARDIOGRAPHY), STRESS(PHYSIOLOGY),
PULSE RATE, HEART, RESPONSES

(U)

AN ATTEMPT WAS MADE TO DETERMINE HEART RATE AND RHYTHM OF EXPERIENCED PARACHUTISTS DURING FREE-FALL AND DURING THE PERIODS IMMEDIATELY BEFORE AND AFTER THE JUMPS. CONTINUOUS EKG RECORDINGS WERE MADE OF 19 EXPERIENCED PARACHUTISTS WHILE EACH PARTICIPATED IN FREE-FALL PARACHUTING EXERCISES. A TOTAL OF 98 INDIVIDUAL EXITS FROM AIRCRAFT IN FLIGHT WERE RECORDED. MEAN R-R INTERVAL WAS 0.403 SECONDS JUST PRIOR TO EXIT FROM THE AIRCRAFT, 0.363 SECONDS DURING FREE-FALL, 0.336 SECONDS IMMEDIATELY AFTER PARACHUTE OPENING, 0.369 AT LANDING, AND 0.405 5 MINUTES AFTER LANDING. ALTHOUGH THERE WAS VARIATION IN THE R-R INTERVAL AMONG INDIVIDUALS, THE PROGRESSIVE DECREASE OF R-R INTERVAL THROUGHOUT THE EXIT AND FREE-FALL WITH A NAUGHT AT PARACHUTE OPENING, WAS THE COMMON THING. THERE IS MARKED INDIVIDUAL DIFFERENCE IN THE DURATION OF TACHYCARDIA BEFORE AND AFTER JUMPS. OVER THE ENTIRE GROUP, MEAN DURATION PER SUBJECT WAS 19.4 MINUTES OF TACHYCARDIA PRIOR TO EXIT, AND 30.4 MINUTES OF TACHYCARDIA AFTER PARACHUTE OPENING. IN THE INDIVIDUALS WHO MADE AT LEAST 2 JUMPS ON ANY ONE DAY, THE R-R INTERVAL MEASURED ON A SINGLE INDIVIDUAL ON THE FIRST AND SECOND JUMPS WERE REMARKABLY SIMILAR, AND WITHIN THE GROUP NOT STATISTICALLY DIFFERENT. A CORRELATION MATRIX WAS COMPUTED TO SHOW RELATIONSHIPS BETWEEN VARIOUS PARAMETERS STUDIED. THE CORRELATION BETWEEN R-R INTERVAL AND TOTAL NUMBER OF JUMPS WAS OPPOSITE IN DIRECTION TO THAT WHICH WAS EXPECTED, AND NEARLY ATTAINED VALUES THAT WERE STATISTICALLY SIGNIFICANT. (AUTHOR)

(U)

UNCLASSIFIED

CDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-683 066 1/3

ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C

DETACHABLE PULL-LOOSE PARACHUTE PACK OUTFIT, (U)

FEB 69 6P LYAKHOV, D. A. STEPANENKO,

I. S. PUGACHOV, V. B. I

REPT. NO. FSTC-HT-23-1020-68

PROJ: FSTC-9509033A0906, FSTC-92236202301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF PATENT (USSR) 205 616 13
NOV 67.

DESCRIPTORS: (PARACHUTES, USSR), RELEASE
MECHANISMS, RUBBER, RELIABILITY, CORDAGE (U)

IDENTIFIERS: DETACHABLE PULL-LOOSE PARACHUTE PACKS,
TRANSLATIONS (U)

A DETACHABLE PARACHUTE PACK PULL OUTFIT, IS
DESCRIBED INVOLVING A MULTI-PIN PULL CORD THE
UPPERMOST PIN OF WHICH IS OF L-SHAPE, A MANUAL
OPENING CORD, AND A PULL CORD, THE LOOPS OF WHICH ARE
ATTACHED TO THE SADDLE OF THE L-SHAPED PIN, A
SAFETY DEVICE FASTENED TO THE PARACHUTE PACK, AN
ARRESTOR COUPLING SET UP ON THE PULL CORD, AND A
POCKET FOR THE L-SHAPED PIN, SEWED TO THE PACK,
BEING DISTINGUISHED THROUGH THE FACT THAT WITH A VIEW
TO ENHANCING RELIABILITY OF OPERATION, IN IT THE L-
SHAPED PIN IS FITTED WITH A PLIABLE LINK, MADE (FOR
EXAMPLE) OF PACK RUBBER AND ATTACHED AT ONE END TO
THE PIN AND AT THE OTHER TO THE PACK BENEATH THE
POCKET. (AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-692 322 1/2 5/9
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C
TWO JUMPS EARLIER. (U)
AUG 69 11P ZHORNIK, D. I
REPT. NO. FSTC-HT-23-122-69
PROJ: FSTC-04231002301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF UNIDENTIFIED RUSSIAN
LANGUAGE ARTICLE.

DESCRIPTORS: (•PARACHUTE JUMPING, •TRAINING),
DESCENT, STABILIZATION SYSTEMS, TRAINING DEVICES,
USSR (U)

IDENTIFIERS: TRANSLATIONS (U)

A NEW TRAINING PROGRAM FOR BEGINNING PARACHUTISTS
INTRODUCES THE STABILIZED FALL AND MANUAL OPENING OF
THE THIRD JUMP. A DESCRIPTION OF GROUND AND
THEORETICAL TRAINING IS GIVEN; THE PROVICHEV
TRAINER WITH ADAPTATIONS IS DESCRIBED AND
ILLUSTRATED. (AUTHOR) (U)

UNCLASSIFIED

/ZONC2

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-693 169 1/3

WRIGHT AIR DEVELOPMENT CENTER WRIGHT-PATTERSON AFB
OHIO

TEST OF PACK - PARACHUTE, AUTOMATIC OPENING
QUICK ATTACHABLE CHEST.

(U)

DESCRIPTIVE NOTE: TECHNICAL NOTE,

MAR 54 13P PARKER, C. G. :

REPT. NO. WADC-TN-WGLE-54-14

UNCLASSIFIED REPORT

DESCRIPTORS: (•PARACHUTE JUMPING, HIGH ALTITUDE),

(•PACKS(PARACHUTE),

PERFORMANCE(ENGINEERING)), AUTOMATIC,

OPERATION, DROP TESTING, RELEASE MECHANISMS

(U)

THE PURPOSE OF THE STUDY WAS TO TEST AN AUTOMATIC
OPENING CHEST STYLE PARACHUTE FOR AIR CREWMEMBER USE
IN HIGH ALTITUDE BAIL OUT. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-693 228

1/3

ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C

PURPOSE AND DESIGN OF PARACHUTES.

(U)

AUG 69 14P SMITREY, G. I.

REPT. NO. FSTC-HT-23-1098-68

PROJ. FSTC-H4231002301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. FROM KRYLYA RODINY (USSR)
V19 NOV 68.

DESCRIPTORS: (PARACHUTES, DESIGN), STRUCTURAL
PARTS, PACKS(PARACHUTE), PARACHUTE JUMPING.

USSR

(U)

IDENTIFIERS: TRANSLATIONS

(U)

THE TRANSLATION GIVES A BRIEF HISTORICAL SKETCH OF
THE DEVELOPMENT OF THE PARACHUTE AND THEN GOES ON TO
DESCRIBE, IN DETAIL, THE DESIGN OF PRESENT-DAY
PARACHUTES, USING THE D-1-B, SERIES 3 PARACHUTE
USED BY THE SOVIET AIRBORNE TROOPS AS AN EXAMPLE.
(AUTHOR)

(U)

UNCLASSIFIED

JDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONCZ

AD-693 432 1/3

ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON, D
C

PARACHUTE SUSPENSION SYSTEM.

(U)

SEP 69 6P

REPT. NO. FSTC-HT-23-388-69

PROJ: FSTC-02R0500

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF PATENT (USSR) 199 688, 8
SEP 67.

DESCRIPTORS: (PACKS(PARACHUTE), DESIGN),
SUSPENSION DEVICES, SAFETY HARNESS, PILOTS,

PATENTS, USSR

(U)

IDENTIFIERS: TRANSLATIONS

(U)

THE PATENT INVOLVES A PARACHUTE SUSPENSION SYSTEM
WHICH PERMITS ONE MAN TO PUT ON AND TIGHTEN THE
COMPLETE PARACHUTE AND PACK AS A UNIT WITHOUT OUTSIDE
ASSISTANCE. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONCZ

AD-694 355 1/3

ARMY NATICK LABS MASS AIRDROP ENGINEERING LAB
EMERGENCY RESCUE PARACHUTES IN HELICOPTERS.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,

JUL 69 22P WOLFF, JAMES W. I

PROJ: DA-I-F-162203-D-195

MONITOR: USA-NLABS TR-70-19-AD

UNCLASSIFIED REPORT

DESCRIPTORS: (•HELICOPTERS, •PARACHUTES),
COCKPITS, COMPATIBILITY, AIRCRAFT SEATS,
CONFIGURATION, SURVIVAL KITS, BODY ARMOR,
SAFETY, ARMY AIRCRAFT

(U)

IDENTIFIERS: RESCUE PARACHUTES

(U)

THE STUDY EVALUATED THE PRESENT EMERGENCY RESCUE
PARACHUTES IN ARMY HELICOPTERS. AN INVESTIGATION
WAS CONDUCTED WITH EACH EMERGENCY RESCUE PARACHUTE TO
DETERMINE COMPATIBILITY WITH COCKPIT GEOMETRY AND
SEAT DESIGN. COMPATIBILITY OF THE AIRCREW
PROTECTIVE ARMOR AND OVERWATER SURVIVAL KIT WITH THE
EMERGENCY RESCUE PARACHUTES WAS ALSO TESTED.
(AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-700 943 15/7

ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C

PARACHUTISTS - AIRBORNE LANDING, (U)

DEC 69 287P LISOV. I. I. I

REPT. NO. FSTC-HT-23-27-77

PROD. FSTC-0423100

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF MONO. DESANTNIKI -
VOZDUSHNYE DESANTY, N.P., 1968 P1-319.

DESCRIPTORS: (•TACTICAL AIR SUPPORT, •AIRMOBILE
OPERATIONS), (•PARACHUTE JUMPING, REVIEWS),
MILITARY TACTICS, HISTORY, AIRMOBILE OPERATIONS,
USSR (U)

IDENTIFIERS: TRANSLATIONS, •AIRBORNE TROOPS,
•WORLD WAR 2 (U)

THE AUTHOR OF THE BOOK INVOLVES HIMSELF WITH HEROIC
CASES OF COMBAT EMPLOYMENT OF SOVIET AIRBORNE
TROOPS AT VARIOUS STAGES OF THE GREAT PATRIOTIC
WAR. MUCH EMPHASIS IS PLACED UPON THE IMPORTANCE
OF THE AIRBORNE AS A MAJOR COMBATIVE STRATAGEM.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-702 997 1/2

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
THEORETICAL BASES OF JUMPING,

DEC 69 L&P KRAVTSOV, I. I

REPT. NO. FTD-MT-24-314-69

PROJ: FTD-4160002

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF KRYLYA
ROJINY (USSR) V20 N5 P26-28 1969, BY RAY E. ZARZA.

DESCRIPTORS: (PARACHUTE JUMPING, THEORY),
PILOTS, OPERATION, PARACHUTE DESCENTS, LANDING
IMPACT, USSR, TRANSPORT PLANES, UTILITY PLANES,
ALTITUDE, TRAINING

IDENTIFIERS: COLT, TRANSLATIONS

(U)

(U)

PARACHUTING TECHNIQUES FROM AN AN-2 AIRCRAFT AT
900 M AND 800 M ARE DESCRIBED. DIRECTIONS ARE GIVEN
FOR CHUTE PLACEMENT BEFORE THE JUMP, OPENING THE
CHUTE, CHUTE MANEUVERING, DESCENT RATE, AND LANDING.
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AU-706 159 1/3
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
PARACHUTE PACKING, (U)
FEB 70 16P SHYENNIKOV, YU. ;
REPT. NO. FTD-HT-23-586-69
PROJ: FTD-4160002

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED TRANS. OF KRYLYA RODINY
(USSR) V20 N2 P26-29 FEB 69, BY H. PECK.

DESCRIPTORS: (PARACHUTES, PACKAGING), RIBBON
PARACHUTES, VISUAL INSPECTION, ASSEMBLING, USSR (U)
IDENTIFIERS: TRANSLATIONS (U)

THE ARTICLE IS A SEQUENCE TO STUDY NO. 11 DATED
1966, WHICH DESCRIBED A PARACHUTE, INTERACTION OF
PARTS, SEQUENCE AND RELIABILITY. THE AUTHOR NOW
DISCUSSES, IN DETAIL, PARACHUTE PACKING FOR SAFETY
PURPOSES. SOME HINTS ARE GIVEN TO SKYDIVING
INSTRUCTORS FOR CONDUCTING PARACHUTE PACKING CLASSES.
(AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO: /ZONC2

AD-674 725 15/7 5/5
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND
MD
AIRDROP ITEMS FOR PERSONNEL. (U)
DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.
JUL 70 11P
REPT. NO. MTP-7-3-076
PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (PARACHUTE JUMPING, HUMAN
ENGINEERING), AIR DROP OPERATIONS, PARACHUTE
DESCENTS, PERFORMANCE (HUMAN), MILITARY TRAINING,
AVIATION PERSONNEL, COMBAT READINESS,
EFFECTIVENESS (U)

IDENTIFIERS: PARATROOPS, EVALUATION (U)

THIS ARMY SERVICE TEST PROCEDURE DESCRIBES
TEST METHODS AND TECHNIQUES FOR EVALUATING THE
PERFORMANCE AND CHARACTERISTICS OF PARACHUTES,
HARNESSES, RELEASE DEVICES, AND OTHER ITEMS FOR
AIRDROP OF PERSONNEL - AND FOR DETERMINING THEIR
SUITABILITY FOR SERVICE USE BY THE U. S. ARMY.
THE EVALUATION IS RELATED TO CRITERIA EXPRESSED IN
APPLICABLE QUALITATIVE MATERIEL REQUIREMENTS
(QMR), SMALL DEVELOPMENT REQUIREMENTS
(SDR), AND TECHNICAL CHARACTERISTICS (TC), OR
OTHER APPROPRIATE DESIGN REQUIREMENTS AND
SPECIFICATIONS. (U)

VI. AIR DROP OPERATIONS

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDNC2

AD-600 741

ARMY NATICK LABS MASS AIRDROP ENGINEERING LAB
MINIMUM AIRDROP ALTITUDES USING STANDARD PARACHUTE
EQUIPMENT.

(U)

APR 64 21P LEWIS, WILLIAM H. :
REPT. NO. ADED-64-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•PARACHUTE DESCENTS, LOW ALTITUDE),
(•AIRDROP OPERATIONS), PARACHUTES, AIR-DROP OPERATIONS,
TRANSPORT PLANES (U)

REQUIREMENTS OF THE AIR FORCE COMPUTED AIR
RELEASE POINT SYSTEM (CARP), PARACHUTE BALLISTIC
DATA INPUT TO THE CARP SOLUTION, AIRDROP CAPABILITY
OF TROOP CARRIER AIRCRAFT, PRESENT AND RECOMMENDED
AIRDROP ALTITUDES, PERFORMANCE CAPABILITY OF EXISTING
STANDARD PARACHUTE EQUIPMENT AND CHANGES TO EXISTING
STANDARD PARACHUTE EQUIPMENT HAVING POTENTIAL FOR
IMPROVING ITS CAPABILITY FOR USE AT LOWER AIRDROP
ALTITUDES, WERE REVIEWED. MINIMUM AIRDROP ALTITUDES
CONSIDERED FEASIBLE USING EXISTING UNMODIFIED
STANDARD PARACHUTE EQUIPMENT WERE DETERMINED.
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZUNC2

AD-602 637

ARMY NATICK LABS MASS APPLIED ENTOMOLOGY GROUP
QUALITATIVE EVALUATION OF THE AIRDROP IMPACT
CAPABILITY OF THE STERILIZER, AUTOCLAVE FOR SPECIAL
FORCES.

(U)

SEP 63 19P
REPT. NO. AE-016

ANTKOWIAK, M. E. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (MEDICAL EQUIPMENT, AIR DROP OPERATIONS),
(AIR DROP OPERATIONS, MEDICAL EQUIPMENT), CARGO
PARACHUTES, DEFORMATION, LANDING IMPACT, VELOCITY,
STRESSES, DAMAGE, ARMED FORCES SUPPLIES, PARACHUTE
DESCENTS, HONEYCOMB CORES, SANDWICH CONSTRUCTION, PAPER,
PACKING MATERIALS

(U)

THE AIRDROP IMPACT CAPABILITY OF THE FUEL-HEATED
PRESSURE AUTOCLAVE DRESSING STERILIZER WAS EVALUATED.
SIX AND STATIC AND ONE AIRDROP WERE CONDUCTED.
RESULTS INDICATE THERE WAS NO EVIDENCE OF
STRUCTURAL DEFORMATION OR FUNCTIONAL DEFECTS. IT
WAS CONCLUDED THAT THE STERILIZER DESIGN IS ADEQUATE
FOR AIRDROP ON A PARACHUTIST AND BY STANDARD AIRDROP
TECHNIQUES, USING PAPER HONEYCOMB AS AN ENERGY
DISSIPATER. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-606 188
ARMY TRANSPORTATION RESEARCH COMMAND FORT EUSTIS VA
SUPPLEMENTARY STUDY OF DESIGN FACTORS IN AIR DELIVERY (U)
FOR CV-7 CARIBOU AIRCRAFT,
AUG 64 35P JONES, R. D. H. J
TASK: 1D643324059806
MONITOR: TRECOM, TR64 46

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•TRANSPORT PLANES, DESIGN), (•CONTAINERS,
MOTION), CARGO, CARGO PARACHUTES, AIR DROP OPERATIONS,
SHORT TAKE-OFF PLANES, FLOORS, FRICTION, STABILITY,
LOADING (MECHANICS), VECTOR ANALYSIS, SAFETY, GUSTS, (U)
HANDLING, PROGRAMMING LANGUAGES (U)
IDENTIFIERS: V-2 AIRCRAFT, V-7 AIRCRAFT

A STUDY WAS MADE OF THE EXTRACTION OF LOADS BY
PARACHUTE FROM THE CV-7 CARIBOU AIRCRAFT. TWO
FORTRAN PROGRAMS ARE INCLUDED TO SHOW THE
CALCULATION OF THE MAXIMUM SAFE ENVELOPE FOR THE
LOADS; VARIOUS CONDITIONS WITH A WIDE RANGE OF
ADJUSTABLE PARAMETERS ARE CONSIDERED. IN THE
PROGRAMS, THE PARAMETERS MAY BE SET AS DATA TO
SIMULATE ANY VALUES, SUCH AS THOSE FOR THE EXTRACTIVE
FORCE OF THE EJECTION PARACHUTE, FOR THE COEFFICIENT
OF SLIDING FRICTION BETWEEN THE FLOOR AND THE LOAD,
AND FOR THE LENGTH OF THE PALLET ON WHICH THE LOAD IS
MOUNTED. THE CONCLUSIONS REACHED ARE NEGATIVE IN
CHARACTER, BUT THEY CAN BE OF VALUE AS A BASIS FOR
FURTHER STUDIES. THE LOAD TIPS SO LITTLE AT THE
SILL OF THE FLOOR WITH THE RAMP UP THAT THE MAXIMUM
SAFE ENVELOPE DEPARTS ONLY SLIGHTLY FROM THE
RECTANGULAR FORM. IT IS BELIEVED THAT THE EFFECTS
OF GUST DISTURBANCES AND OF POSSIBLE JAMMING IN THE
RAIL RESTRAINT AND RELEASE SYSTEM SHOULD BE
INVESTIGATED. SINCE, FROM TIME TO TIME, THESE
INFLUENCES WILL CAUSE THE LOAD TO TIP THROUGH ANGLES
OF INCLINATION OF A HIGHER ORDER OF MAGNITUDE THAN
THOSE DUE TO DYNAMICAL CONSIDERATIONS. (AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 7Z0NC2

AD-609 366

TACTICAL AIR COMMAND LANGLEY AFB VA
OPERATIONAL TEST AND EVALUATION OF C-119, ALAMO SLING
SHOT AERIAL DELIVERY SYSTEM. (U)

DEC 64 84P

MONITOR: TAC , TR64 60

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: LEGIBILITY OF THIS DOCUMENT IS IN PART
UNSATISFACTORY. REPRODUCTION HAS BEEN MADE FROM BEST
AVAILABLE COPY.

DESCRIPTORS: (AIR DROP OPERATIONS, POSITIONING DEVICES
(MACHINERY)), (POSITIONING DEVICES (MACHINERY), AIR
DROP OPERATIONS), TRANSPORT PLANES, AIRCRAFT EQUIPMENT,
HANDLING, RELEASE MECHANISMS, CARGO, PARACHUTE DESCENTS,
CONTAINERS, AIR FORCE OPERATIONS, AIR FORCE TRAINING,
LOGISTICS, FEASIBILITY STUDIES, AIR TRANSPORTATION (U)

IDENTIFIERS: C-119 AIRCRAFT, ALAMO SLING-SHOT
SYSTEMS (U)

THE OBJECTIVE OF THIS OPERATIONAL TEST WAS TO
EVALUATE THE CAPABILITY, SUITABILITY, AND TRAINING
REQUIREMENTS OF THE 'ALAMO SLING-SHOT SYSTEM'
FOR AERIAL DELIVERY FROM C-119 AIRCRAFT. IT WAS
DETERMINED THAT C-119 AIRDROP CAPABILITY WAS
GREATLY IMPROVED BY USE OF THE 'ALAMO SLING-
SHOT SYSTEM.' DUE TO A VAST IMPROVEMENT IN
AIRDROP ACCURACY, RELIABILITY, EASE OF LOADING,
RIGGING, VERSATILITY, AND MINIMUM AIRCREW TRAINING
REQUIRED TO OBTAIN PROFICIENCY. IT IS RECOMMENDED
THAT THE 'ALAMO SLING-SHOT SYSTEM' BE
APPROVED FOR OPERATIONAL USE IN AIRDROPPING A-22
CONTAINERS AND OTHER SIMILAR LOADS FOR WHICH RIGGING
PROCEDURES HAVE BEEN ESTABLISHED. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-633 249 15/7 1/2
LOCKHEED-GEORGIA CO MARIETTA
C-141A ENGINEERING FLIGHT TEST RESULTS OF THE AERIAL
DELIVERY SYSTEM TESTS, (U)
FEB 66 603P PIEPER, J. W. HOBBS, J. . :
REPT. NO. ER-5473,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•FLIGHT TESTING, •AIR DROP
OPERATIONS), (•JET TRANSPORT PLANES, FLIGHT
TESTING, PACKAGING, EXPERIMENTAL DATA, CARGO,
EJECTION, PERFORMANCE(ENGINEERING), HANDLING,
CARGO PARACHUTES, LOADING(MECHANICS),
MECHANICAL FASTENERS, DISCONNECT FITTINGS (U)
IDENTIFIERS: C-141 AIRCRAFT (U)

AERIAL DELIVERY SYSTEMS TESTS WERE ACCOMPLISHED
WITH THE C-141A, AF63-8077 (LAC 6008) AT
THE NAVAL AIR FACILITY, EL CENTRO,
CALIFORNIA. THESE TESTS CONSISTED OF PERSONNEL
DELIVERY DROPS (DUMMY DROPS), EXTRACTION LINE
LENGTH TESTS, EXTRACTION PARACHUTE TOW TESTS, SINGLE
PACKAGE CARGO DROPS, AND MULTIPLE PACKAGE CARGO
DROPS, QUALITATIVE EVALUATIONS, AIRPLANE RESPONSE
PARAMETERS, AND AIRPLANE LOADS OBTAINED DURING THESE
TESTS ARE CONTAINED IN THIS REPORT. (AUTHOR) (U)

UNCLASSIFIED

/ZONC2

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-646 578 1/3
ARMY AVIATION MATERIEL LABS FORT RUSTIS VA
INVESTIGATION OF DEPLOYMENT AND LANDING LOADS WITH A
LIMP PARAGLIDER. (U)
DESCRIPTIVE NOTE: FINAL REPT.
SEP 66 SIP SOBCZAK, JOHN W. I
REPT. NO. USAAVLABS-TR-66-82
PROJ: DA-1LO13001A91A

UNCLASSIFIED REPORT

DESCRIPTORS: (PARACHUTES, GLIDERS), LANDING
IMPACT, WINGS, LOADING(MECHANICS), PARACHUTE
JUMPING, DROP TESTING (U)
IDENTIFIERS: PARAGLIDERS (U)

THE REPORT COVERS THE INITIAL EVALUATION OF THE
NATIONAL AERONAUTICS AND SPACE
ADMINISTRATION'S (NASA) 24-FOOT LIMP PARAWING FOR
USE AS A MANNED AERIAL DELIVERY SYSTEM. A
SATISFACTORY APPLICATION OF THE PARAWING TO THIS USE
WILL PROVIDE THE CAPABILITY OF OFFSET PRECISION
AERIAL DELIVERY OF PERSONNEL. AIDED BY A
NAVIGATIONAL SYSTEM, THE PARAWING COULD BE EMPLOYED
DURING NIGHT AND DURING CONDITIONS OF ADVERSE
VISIBILITY. THE PRIMARY OBJECTIVE OF THE
EVALUATION WAS THE ACQUISITION OF DEPLOYMENT LOAD
DATA ON THE PARAWING. TESTING, WHICH INCLUDED
DUMMY DROP TESTS AND LIVE DROP TESTS, WAS CONDUCTED
FROM 16 MARCH 1966 TO 20 APRIL 1966. IN
GENERAL, THE MEASURED AND OBSERVED CHARACTERISTICS OF
THE PARAWING, COUPLED WITH THE COMMENTS OF THE
MEMBERS OF THE U. S. ARMY PARACHUTE TEAM
(USAPT) WHO FLEW THE WING, INDICATE THAT THE
PARAWING HAS POTENTIAL AND MERITS FURTHER
INVESTIGATION. SPECIFICALLY, THE LOADS WERE FOUND
TO BE WITHIN HUMAN TOLERANCE AND WERE NO GREATER THAN
THOSE EXPERIENCED IN JUMPING CONVENTIONAL PARACHUTES.
THE GLIDE RATIO OF THE PARAWING APPEARS TO BE IN
EXCESS OF 2:1. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-667 401 15/7

GOODYEAR AEROSPACE CORP AKRON OHIO
PRELIMINARY INVESTIGATION OF CONCEPTS FOR LOW-
ALTITUDE AIRDROP OF PERSONNEL - EXPLORATORY
DEVELOPMENT.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 30 NOV 65-1 NOV 66;

UEC 66 177P LAU, RICHARD A. ;

REPT. NO. GER-12888

CONTRACT: DA-19-129-AMC-855(N)

PROJ: DA-1M121401D195

MONITOR: USA-NLABS TR-68-43-AD

UNCLASSIFIED REPORT

DESCRIPTORS: (INFANTRY, AIRBORNE), (ARMY
PERSONNEL, AIR DROP OPERATIONS), DESCENT,
DECELERATION, LOW ALTITUDE, PARACHUTES, ROTARY
WINGS, GLIDERS, KING WINGS, PARAWINGS,
PERFORMANCE (ENGINEERING), STABILITY, RECOVERY,
VELOCITY, DRAG, AERODYNAMIC LOADING,
MATHEMATICAL ANALYSIS

(U)

IDENTIFIERS: DRAG CONES, LIFT PLATFORMS, CANOPY
SYSTEMS, LIFT/DRAG RATIO

(U)

THE REPORT PRESENTS THE RESULTS OF AN ANALYTICAL
STUDY THAT WAS CONDUCTED OF VARIOUS AERODYNAMIC
DECELERATORS TO DETERMINE THE FEASIBILITY OF USE,
DURING MASS TROOP JUMPS, AT ALTITUDES OF 500 FEET OR
BELOW, FROM FIXED AND ROTARY WING AIRCRAFT FLYING AT
SPEEDS OF 40 TO 150 KNOTS. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZBNCL

AU-670 965 1/3 15/7
LTV AEROSPACE CORP DALLAS TEX LTV VOUGHT AERONAUTICS
DIV
DYNAMIC RESPONSE OF THE XC-142A TILT-WING V/STOL
AIRCRAFT TO IN-FLIGHT CARGO DELIVERY AT SLOW SPEEDS. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
MAR 68 123P WILSON, JERRY H. ISCHRA,
MIKE P. DEITERING, J. STEVE I
REPT. NO. 2-53310/68-6098
CONTRACT: DA-44-177-AMC-32717
PROJ: DA-1F121401A254
MONITOR: USAAVLABS TR-68-4

UNCLASSIFIED REPORT

DESCRIPTORS: (•TRANSPORT PLANES, •AIR DROP
OPERATIONS), (•VERTICAL TAKE-OFF PLANES, AIR DROP
OPERATIONS), CARGO, AIRSPEED, PAYLOAD,
HOVERING, GROUND EFFECT, CARGO PARACHUTES,
MILITARY PERSONNEL, TILT WINGS, SIMULATION,
MATHEMATICAL MODELS (U)
IDENTIFIERS: XC-142A AIRCRAFT, C-142 AIRCRAFT,
TRANSITION FLIGHT, EXTRACTION PARACHUTES,
GRAPHS(CHARTS) (U)

THE POTENTIAL ABILITY OF V/STOL AIRCRAFT TO
PERFORM ARMY DROP MISSIONS AT VARIOUS ALTITUDES
WHILE FLYING AT SPEEDS FROM HOVER TO CONVENTIONAL
FLIGHT COULD PROVIDE A BASIS FOR PRECISION IN-FLIGHT
DELIVERY AND COULD OVERCOME MAJOR OPERATIONAL
RESTRICTIONS ASSOCIATED WITH MANY OF THE CONVENTIONAL
AIR-DROP TECHNIQUES. THE STUDY WAS PARTIALLY BASED
ON ACTUAL AIR-DROP DEMONSTRATIONS. SINGLE CARGO
LOADS OF UP TO 3,000 POUNDS WERE GRAVITY DROPPED IN
HOVER AND AT 30 KNOTS, AND LOADS OF UP TO 4,000
POUNDS WERE EXTRACTED BY PARACHUTE AT 127 KNOTS.
USING THESE FLIGHT DATA TO SET UP A REALISTIC
SIMULATION, A MATHEMATICAL MODEL OF THE XC-142A
AIRPLANE AND A HUMAN PILOT WERE USED TO EXAMINE THE
AIRCRAFT'S RESPONSE WITH CARGO WEIGHTS UP TO THE
AIRPLANE'S MAXIMUM PAYLOAD OF 8,000 POUNDS IN THE
LOW-SPEED PORTION OF TRANSITION AND 12,000 POUNDS AT
A 127-KNOT FLIGHT CONDITION. THE STUDY SHOWS THAT
THE MAXIMUM PAYLOAD COULD BE SUCCESSFULLY DROPPED
WITH PROPER PILOT TECHNIQUE. MEANS OF EXTENDING
THE AIRPLANE'S AIR-DROP CAPABILITY THROUGH THE USE OF
SPECIAL EXTRACTION FORCES AND PARAMETERS APPLICABLE
TO THE AIR-DROP SYSTEM WERE STUDIED.
(AUTHOR) (U)

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/ZBNCL

UNCLASSIFIED

JDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONCZ

AD-671 682 15/7
LOCKHEED-GEORGIA CO. MARIETTA
PRELIMINARY INVESTIGATION OF TROLLEY LOW ALTITUDE
AIRDROP CONCEPT. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
APR 68 202P MILLER, C. W. IALFORD, D.
E. KOMODOVSKI, H. E. STOKES, F. H. I
CONTRACT: DA-19-129-AMC-856(N)
PROJ: DA-1F121401D195
MONITOR: USA-NLABS TR-68-55-AD

UNCLASSIFIED REPORT

DESCRIPTORS: (AIR DROP OPERATIONS, LOW ALTITUDE),
FEASIBILITY STUDIES, CARGO PARACHUTES, LANDING
IMPACT, TOWED BODIES, CABLES (MECHANICAL),
AVIATION SAFETY, BRAKING, TRANSPORT PLANES,
CARGO, HANDLING, COMPATIBILITY, JET TRANSPORT
PLANES, SHORT TAKE-OFF PLANES (U)
IDENTIFIERS: C-130 AIRCRAFT, EXTRACTION
PARACHUTES, COMPUTER SIMULATION, TROLLEY AIR DROP
TECHNIQUES, C-141A AIRCRAFT, C-141 AIRCRAFT,
CV-7A AIRCRAFT, CV-7 AIRCRAFT, CV-2
AIRCRAFT (U)

THE LOCKHEED TROLLEY LOW ALTITUDE AIRDROP
CONCEPT EMPLOYS A TOWED PARACHUTE TO MAINTAIN
TENSION IN A LONG CABLE FROM WHICH A LOAD MAY BE
SUSPENDED UNTIL IT CONTACTS THE GROUND. AFTER IT
IS EXTRACTED BY THE FORCE OF THE PARACHUTE, THE LOAD
SLIDES BENEATH THE CABLE UNTIL IT CONTACTS THE
GROUND. RATE OF DESCENT IS CONTROLLED BY A WINCH
IN THE AIRCRAFT THAT REELS IN THE CABLE AS NEEDED TO
MINIMIZE IMPACT VELOCITY. THIS PRELIMINARY
CONCEPT-ORIENTED INVESTIGATION WAS UNDERTAKEN TO
DETERMINE THE FEASIBILITY OF DEVELOPING THIS SYSTEM
FOR OPERATIONAL USE. THE STUDY CONSISTS OF
ANALYTICAL EVALUATION OF THE OPERATIONAL PARAMETERS,
LIMITED COMPONENT TESTING, AND CONSIDERATION OF BASIC
HARDWARE REQUIREMENTS. DIGITAL AND ANALOG COMPUTER
SIMULATIONS OF TROLLEY AIRDROP ARE AMONG THE
ANALYTICAL METHODS EMPLOYED. TWO TESTS OF A
PARACHUTE TOWED ON A TROLLEY CABLE BEHIND A C-130
AIRCRAFT ARE EVALUATED. LABORATORY TESTS OF
CERTAIN COMPONENTS ARE ANALYZED WITH RESPECT TO
FLIGHT SAFETY. RESULTS OF THE STUDY INDICATE NO
PROBLEMS WHICH PRECLUDE THE DEVELOPMENT OF THE
TROLLEY AIRDROP CONCEPT INTO AN OPERATIONAL SYSTEM
FOR AIRDROPPING INDIVIDUAL LOADS OF 2,000 TO 10,000
POUNDS FROM A C-130 BELOW 500 FEET. COMPARISON
OF TROLLEY TO CONVENTIONAL AIRDROP SHOWS: (1) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-672 579 15/7 1/3

AAI CORP COCKEYSVILLE MD

GROUND SLIDE AIRDROP STUDY: PHASE I (ADDENDUM) (U)

AUG 66 147P WIBLEY R. C. FOSTER, J.

E. I

REPT. NO. ER-3841-ADD

CONTRACT: DA-19-129-AMC-337(N)

PROJ: DA-1F121401D195

MONITOR: USA-NLABS TR-69-15-AD

UNCLASSIFIED REPORT

DESCRIPTORS: (AIR DROP OPERATIONS, TESTS),
LANDING IMPACT, CURVE FITTING, DESCENT, COMPUTER
PROGRAMS, CARGO, TRANSPORT PLANES, CARGO
PARACHUTES (U)

IDENTIFIERS: GRAPHS(CHARTS), COMPUTER
ANALYSIS, EXTRACTION PARACHUTES (U)

THE OBJECT OF THE REPORT IS TO PRESENT THE FINDINGS
OF THE EXPLORATORY TEST PHASE, PHASE II,
AND TO COMPARE THE ACTUAL FINDINGS TO THOSE PREDICTED
BY THE PHASE I STUDY. RESULTS OF LIMITED
FLIGHT TESTS ARE PRESENTED AND COMPARED TO ANALYTICAL
RESULTS WHICH WERE GENERATED USING TEST CONDITIONS
AS INPUT VALUES. IN GENERAL, THE TEST VALUES AND
THE COMPUTED VALUES ARE IN CLOSE AGREEMENT. ALSO
INCLUDED ARE ALL CHANGES, DELETIONS AND REVISIONS TO
BE INCORPORATED IN THE PRELIMINARY DESIGN
SPECIFICATIONS OF THE PHASE I REPORT.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-672 081 1/3 15/7

AAI CORP COCKEYSVILLE MD

PARACHUTE REEL-OUT REEL-IN LOW ALTITUDE AIRDROP
EXPLORATORY DEVELOPMENT, (U)

DESCRIPTIVE NOTE: FINAL REPT.,

AUG 66 242P

MILLS, R. R., JR.; PAYNE,

R. S., JR.; CRITCHER, J. L.; BRUNKLES, M. V.

, IIII

CONTRACT: DA-19-129-AMC-847(N)

PROJ: DA-1M121401D195

MONITOR: USA-NLABS TR-69-13-AD

UNCLASSIFIED REPORT

DESCRIPTORS: (AIR DROP OPERATIONS, LOW ALTITUDE),

(CARGO PARACHUTES, REELS), LANDING IMPACT,

DESCENT, CARGO, PERFORMANCE(ENGINEERING),

RELIABILITY, SYSTEMS ENGINEERING, DESCENT

TRAJECTORIES (U)

IDENTIFIERS: EXTRACTION PARACHUTES (U)

RESULTS AND CONCLUSIONS ARE REPORTED FOR WORK
ACCOMPLISHED ON THE PROGRAM, DURING THE PERIOD 30
NOVEMBER 1965 THROUGH 31 AUGUST 1966, OF
EVALUATING PARACHUTE REEL IN/REEL OUT SYSTEMS
DESIGNED TO PERMIT AIRDROPS TO BE MADE FROM ALTITUDES
OF 500 FEET OR LESS AND WITH VERTICAL VELOCITIES OF
THE CARGO AT GROUND IMPACT NOT EXCEEDING 28.5 FPS,
WITH AS LITTLE HORIZONTAL MOTION AS POSSIBLE. THE
WEIGHT RANGE OF THE CARGOS OF INTEREST IS BETWEEN
2000 AND 35000 LB. CARGO DESCENT TRAJECTORY DATA
AND CANDIDATE REEL SYSTEM DESIGNS ARE PRESENTED AND
DISCUSSED IN THE REPORT. A REVIEW OF THE PROGRAM
REQUIREMENTS IS ALSO INCLUDED. (AUTHOR) (U)

UNCLASSIFIED

JOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-672 087 1/3 15/7
PIONEER PARACHUTE CO INC MANCHESTER CONN
ELEVATION OF RECOVERY PARACHUTE; LOW-ALTITUDE
AIRDROP OF EXPLORATORY DEVELOPMENT. (U)
DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 30 NOV 65-31
AUG 66;
AUG 66 62P VICKERY, EDWIN D. ;
CONTRACT: DA-19-129-AMC-849(N)
PROJ: DA-IMI214010195
MONITOR: USANLABS TR-69-12-AD

UNCLASSIFIED REPORT

DESCRIPTORS: (•CARGO PARACHUTES;
PERFORMANCE(ENGINEERING)), (•AIR DROP
OPERATIONS, LOW ALTITUDE), CARGO, DECELERATION,
LIFT, FLIGHT PATHS, FEASIBILITY STUDIES,
ECONOMICS (U)
IDENTIFIERS: LIFT PARACHUTES, RECOVERY PARACHUTES,
EXTRACTION PARACHUTES (U)

THE REPORT DISCUSSES THE APPROACHES PURSUED, AND
THE RESULTS AND CONCLUSIONS REACHED, DURING THE
PRELIMINARY STUDY CONDUCTED TO INVESTIGATE THE
FEASIBILITY OF ELEVATING THE MAIN RECOVERY PARACHUTES
ABOVE THE FLIGHT PATH OF AN AIRDROP AIRCRAFT BY MEANS
OF AUXILIARY LIFTING PARACHUTES. PRELIMINARY
ANALYTICAL STUDIES AND EXPERIMENTAL TESTS WERE
CONDUCTED DURING THE EVALUATION PERIOD. THE
OVERALL OBJECTIVE WAS TO DETERMINE THE TECHNICAL,
OPERATIONAL, AND ECONOMIC FEASIBILITY OF ELEVATING
THE MAIN RECOVERY PARACHUTE TO ACHIEVE A LOW-ALTITUDE
AIRDROP CAPABILITY OF 500 FT (ABSOLUTE) ALTITUDE
OR LESS, AS A BASIS FOR DETERMINING IF FURTHER IN-
DEPTH STUDY WERE WARRANTED. THE RESULTS INDICATE
THAT THE ELEVATION OF RECOVERY PARACHUTES BY
AUXILIARY LIFTING PARACHUTES IS NOT FEASIBLE.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-690 808 -1/3 1/2 15/7

ARMY NATICK LABS MASS AIRDROP ENGINEERING LAB
TWO BODY TRAJECTORY ANALYSIS OF A PARACHUTE CARGO
AIRDROP SYSTEM.

(U)

DESCRIPTIVE NOTE: RESEARCH REPT.,

APR 69 46P GIONFRIDDO, MAURICE P. ;

REPT. NO. TR-69-80-AD

PROJ: DA-1-F-162203-D-195

UNCLASSIFIED REPORT

DESCRIPTORS: (•CARGO PARACHUTES, •AIR DROP
OPERATIONS), (•PARACHUTE DESCENTS, •DESCENT
TRAJECTORIES), EQUATIONS OF MOTION, ALTITUDE,
OPTIMIZATION, DRAG, AERODYNAMIC CHARACTERISTICS,
NUMERICAL ANALYSIS.

(U)

IDENTIFIERS: •CLUSTER PARACHUTES

(U)

EQUATIONS OF MOTION FOR A THREE-DEGREE-OF-FREEDOM,
TWO-BODY AIRDROP SYSTEM WERE DERIVED AND NUMERICAL
SOLUTIONS OBTAINED BY USE OF A DIGITAL COMPUTER.
IT WAS ASSUMED THAT, FOR GIVEN INITIAL CONDITIONS,
THE PARACHUTE DRAG AREA WAS A FUNCTION OF TIME ONLY.
THE RESULTS INDICATED THAT: (1) THE DERIVED
EQUATIONS OF MOTION RESULT IN CALCULATED TRAJECTORIES
WHICH ARE GOOD REPRESENTATIONS OF ACTUAL AIRDROP
TRAJECTORIES. (2) THE PARAMETER WHICH MOST
AFFECT ALTITUDE LOSS TO EQUILIBRIUM ARE PARACHUTE-
CARGO LINE LENGTH AND PARACHUTE OPENING TIME. (3)
THERE IS AN OPTIMUM PARACHUTE OPENING TIME WHICH
RESULTS IN MINIMUM ALTITUDE LOSS TO EQUILIBRIUM.
LONGER OR SHORTER OPENING TIMES WILL RESULT IN
GREATER ALTITUDE LOSSES TO EQUILIBRIUM. (4)
MODERATE VARIATIONS OF AIRCRAFT FLIGHT PATH
INCLINATION, INITIAL CARGO ACCELERATION, AND INITIAL
CARGO VELOCITY HAVE ONLY A SMALL EFFECT ON ALTITUDE
LOSS TO EQUILIBRIUM. (5) FOR A GIVEN EQUILIBRIUM
VELOCITY, A CLUSTER OF SMALL PARACHUTES APPEARS TO BE
A BETTER CHOICE THAN A SINGLE LARGE PARACHUTE FOR
OBTAINING MINIMUM ALTITUDE LOSS TO EQUILIBRIUM.
(AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-691 005 1/2 13/9
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C
SHOCK ABSORBER FOR PARACHUTE LOAD, (U)
JUN 69 6P TKASHEV, F. D. PICHUGIN, A.
A. I. MAEV, E. N. KUTYKOV, V. G. I
REF. NO. FSTC-HT-23-395-69
PROJ. FSTC-99170030906, FSTC-92236282301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF PATENT (USSR) 173 127, 7
JUL 65.

DESCRIPTORS: (AIR DROP OPERATIONS, PALLETS),
(PACKS(PARACHUTE), SHOCK ABSORBERS), IMPACT
TESTS, WOOD, ELASTICITY, PATENTS, USSR (U)
IDENTIFIERS: TRANSLATIONS, (U)
BARRELS(CONTAINERS)

A SHOCK ABSORBER IS PROPOSED, WHICH IS PRIMARILY
DESIGNED FOR PARACHUTE AIRDROPPING OF BARRELS OF
FLUID. THE INVENTION IS DISTINGUISHED BY THE FACT
THAT THE LOAD IS PROTECTED AT THE MOMENT OF LANDING
BY A BEARING MADE OF WOOD OR OTHER ELASTIC MATERIAL,
ATTACHED BY MEANS OF A BAND. THE CENTER OF THE
SPHERICAL SURFACE OF THE BEARING IS PLACED ABOVE THE
CENTER OF GRAVITY OF THE VESSEL. (AUTHOR) (U)

UNCLASSIFIED

JDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-691 436

1/2

15/7

TACTICAL AIRLIFT CENTER POPE AFB NC OFFICE OF OPERATIONS
ANALYSIS

A COMPUTER PROGRAM FOR DETERMINING THE TRAJECTORY
AND PLATFORM ATTACK ANGLE OF A LAPES PLATFORM DURING
FREE FALL. (U)

DESCRIPTIVE NOTE: TECHNICAL MEMO.,

JUN 69

20P

LINK, DAVID A. :

REPT. NO. TALC-0A-TM-3

UNCLASSIFIED REPORT

DESCRIPTORS: (CARGO, AIR DROP OPERATIONS),
(PARACHUTE DESCENTS, DESCENT TRAJECTORIES),
TACTICAL AIR SUPPORT, MATHEMATICAL MODELS, FREE
FALL MODELS, EQUATIONS OF MOTION, ANGLE OF ATTACK,
ATTITUDE CONTROL SYSTEMS, ROTATION, CENTER OF
MASS, PROGRAMMING (COMPUTERS) (U)

IDENTIFIERS: LAPES (LOW EXTRACTION SYSTEM),
LOW ALTITUDE EXTRACTION SYSTEM, LAPES PLATFORMS,
COMPUTER ANALYSIS, COMPUTERIZED SIMULATION. (U)

THIS MEMORANDUM CONTAINS A DYNAMIC ANALYSIS OF THE
FREE-FALL PORTION OF THE LAPES TRAJECTORY. THE
ANALYSIS WAS MADE IN RESPONSE TO A REQUEST FOR A MORE
EXACT METHOD FOR LOCATING THE ATTITUDE CONTROL BAR
FOR UNUSUAL SINGLE-PLATFORM LOADS, SUCH AS VEHICLES.
RESULTS ARE PRESENTED IN THE FORM OF A PROGRAM IN
THE CONTINUOUS SYSTEM MODELING PROGRAM
(CSMP) LANGUAGE FOR SOLVING THE EQUATIONS OF MOTION
AND GRAPHS FOR AN EXAMPLE CALCULATION. (AUTHOR) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-691 553 13/4 15/5
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C
AIRDROP CONTAINERS: (U)
JUN 69 7P PRIVALOV, A. I. ; LUKASHEV,
B. F. ; SOSNIN, A. I. ;
REF: NO. FSTC-HT-23-393-69
PROJ: FSTC-9917003L906, FSTC-92236282301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF PATENT (USSR) 184 152, 8
SEP 66.

DESCRIPTORS: (*AIR DROP OPERATIONS, CARGO);

(*CARGO, *CONTAINERS); CARGO PARACHUTES,
PALLET; SHOCK ABSORBERS; PATENTS, USSR (U)

IDENTIFIERS: TRANSLATIONS (U)

A CONTAINER FOR AIRDROPPING CARGO, CONSISTING OF A
CYLINDRICAL HOUSING WITH A REINFORCED BOTTOM AND
DETACHABLE LID, WITH A CHAMBER FOR A PARACHUTE INSIDE
A PORTABLE CASE FOR PACKING THE CARGO AND STABILIZING
THE PARACHUTE, WHICH IS ATTACHED TO THE LID OF THE
CONTAINER, IS DESCRIBED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-693 176 11/5 15/5 15/7
WRIGHT AIR DEVELOPMENT CENTER WRIGHT-PATTERSON AFB
OHIO
THE DESIGN AND FABRICATION OF AERIAL DELIVERY SLING
SUSPENSIONS FROM WOVEN NYLON WEBBING. (U)
DESCRIPTIVE NOTE: TECHNICAL NOTE
AUG 54 SUP JINGERSOLL, H. H. , JRI
REPT. NO. WADC-TN-WCLE-54-40
TASK: 61547

UNCLASSIFIED REPORT

DESCRIPTORS: (*CARGO, AIR DROP OPERATIONS),
(*CORDAGE, DESIGN), STRENGTH, COSTS,
MANUFACTURING METHODS, NYLON, THICKNESS, CARGO
PARACHUTES, LOADING (MECHANICS), TENSILE
PROPERTIES, ELONGATION (U)

THE PURPOSE OF THE STUDY WAS TO REDESIGN THE
EXISTING SLING SUSPENSIONS CURRENTLY USED FOR AERIAL
DELIVERY PURPOSES IN ORDER TO REDUCE THE HIGH COST OF
MANUFACTURE AND TO INCREASE THE STRENGTH EFFICIENCY
OF THE SLING. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONCZ

AD-699 342 15/7 21/8
ARMY NATICK LABS MASS
A PARACHUTE RETROCKET RECOVERY SYSTEM FOR AIRDROP
OF HEAVY LOADS. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
NOV 69 35P CHAKOIAN, GEORGE I
REPT. NO. USA-NLABS-TR-7J-34-AD
PROJ: DA-1-F-16220J-D-195

UNCLASSIFIED REPORT

DESCRIPTIONS: (•AIR DROP OPERATIONS, CARGO
PARACHUTES), (•CARGO PARACHUTES, •RETRO
ROCKETS), LOW ALTITUDE, RECOVERY, DEPLOYMENT,
SENSORS, DROP TESTING, DESCENT TRAJECTORIES,
LANDING IMPACT, DESIGN, LOGISTICS (U)
IDENTIFIERS: PRADS(PARACHUTE RETROCKET AIR
DROP SYSTEMS), PARACHUTE RETROCKET AIR DROP
SYSTEMS (U)

THE REPORT PRESENTS THE RESULTS OF AN IN-DEPTH
EXPLORATORY DEVELOPMENT STUDY OF A PARACHUTE
RETROCKET RECOVERY SYSTEM FOR THE AIRDROP OF CARGO
LOADS WEIGHING UP TO 50,000 POUNDS AND THE RESULTS OF
ACTUAL DROP TESTS OF LOADS WEIGHING FROM 3000 TO 35,
000 POUNDS. THE STUDY INDICATES THAT A PARACHUTE
RETROCKET RECOVERY SYSTEM IS PARTICULARLY FEASIBLE
FOR THE RECOVERY OF AIRDROP LOADS AND MAY PROVE TO BE
THE ONLY PRACTICAL SYSTEM FOR HEAVY LOADS, ESPECIALLY
IF LOW ALTITUDE IS A REQUIREMENT. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-700 685 6/7 1/3
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB
OHIO
LONG LINE LOITER,
69 5P COULTER, RICHARD P. I. (U)
REPT. NO. AMRL-TR-70-2
PROJ: AF-7184
TASK: 718405

UNCLASSIFIED REPORT
AVAILABILITY: PUB. IN INTERCEPTOR, PID-12 DEC
69.

DESCRIPTORS: (AERIAL PICKUP SYSTEMS, RESCUES),
CABLES (MECHANICAL), AIR DROP OPERATIONS,
TURNING FLIGHT, TOWED BODIES, HOISTS, PARACHUTE
DESCENTS (U)

IDENTIFIERS: LLL (LONG LINE LOITER), LONG
LINE LOITER, LONG LINE LOITER SYSTEMS (U)

MANEUVERING TECHNIQUES FOR FIXED WING AIRCRAFT
POSITIONING A TOWED MASS NEAR THE CENTER OF AN ON-
PYLON TURN ARE DISCUSSED. POSSIBLE RESCUE USES OF
THE CIRCLING LINE TECHNIQUE ARE SUGGESTED.
(AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-840 366 15/7

ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D

C

ATTACKERS FROM THE SKY, (U)

68

9F

KARGELOV, V. I.

REPT. NO. FSTC-HT-23-245-68

PROJ: FSTC-82236282301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. FROM KRASNAYA ZVEZDA
(USSR) P2, 20 FEB 68.

DESCRIPTORS: (ARMED FORCES (FOREIGN), AIR DROP
OPERATIONS), ARMED FORCES OPERATIONS, AIRBORNE,
CARGO PARACHUTES, TRANSPORT PLANES, HISTORY,
PREDICTIONS, NUCLEAR WARFARE, USSR (U)

IDENTIFIERS: AIRBORNE FORCES, TRANSLATIONS,
PARATROOPERS (U)

THIS ARTICLE IS BASICALLY A HISTORICAL SKETCH OF
THE DEVELOPMENT OF THE AIRBORNE FORCES IN THE USSR.
THE AUTHOR DISCUSSES THE DEVELOPMENT OF THE
AIRBORNE FORCES AND MENTIONS SEVERAL INSTANCES DURING
W. 2 IN WHICH THE FORCES WERE USED. THE AUTHOR
STATES THAT IN MODERN WARFARE, THE NUCLEAR MISSILE IS
THE BASIC MEANS OF DESTRUCTION AND THAT THE PRESENT
ROLE OF THE WINGED INFANTRY STEMS FROM THIS FACT.
IT INVOLVES THE CAPABILITY TO QUICKLY AND MOST
EFFECTIVELY EXPLOIT THE RESULTS OF ATOMIC WEAPON USE
AND TO COOPERATE WITH GROUND FORCES IN THE
SEIZURE OF VITALLY IMPORTANT AREAS IN THE THEATER OF
WAR OPERATIONS. THE AUTHOR THEN DISCUSSES SOME OF
THE MODERN COMBAT MISSIONS OF SOLDIER-PARATROOPERS.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-851 494 15/7 1/2
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C
SOVIET AIRBORNE FORCES, (U)
APR 69 103P L150V, I. I. I.
REPT. NO. FSTC-HT-23-564-19
PROJ: FSTC-82236282301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF MONO. SOVETSKIE
VOZDUSHNO-DESANTNYE VOISKA, MOSCOW, 1967.

DESCRIPTORS: (•AIRMOBILE OPERATIONS, ARMED
FORCES(FOREIGN)), (•AIR DROP OPERATIONS,
PARACHUTE JUMPING), TACTICAL WARFARE, MILITARY
TACTICS, PARACHUTES, COMMUNISTS, CLOSE SUPPORT,
TRANSPORT PLANES, PROPAGANDA, USSR (U)
IDENTIFIERS: TRANSLATIONS, SKYDIVING (U)

THIS BOOKLET PRESENTS A SHORT HISTORY OF THE
DEVELOPMENT OF THE AIRBORNE FORCES AND OF THE SPORT
OF SKYDIVING, WHICH IS CLOSELY ASSOCIATED WITH THESE
FORCES. THE HISTORY OF AIRBORNE ACTIVITIES DURING
THE SECOND WORLD WAR IS INCLUDED.
CONTEMPORARY PARACHUTE LANDING METHODS AND
AVIATION-TRANSPORT EQUIPMENT ARE DESCRIBED, AND THE
DEVELOPMENT OF THE SPORT OF SKYDIVING AND OF
PARACHUTE TESTING PROGRAMS ARE OUTLINED.
(AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZUNC2

AD-571 344 1374
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND
MD
ARCTIC ENVIRONMENTAL TEST OF AIRDROP
PLATFORMS. (U)
DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.
MAY 70 10P
REPT. NO. MTP-7-4-009
PROJ. AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (AIR DROP OPERATIONS, CONTAINERS),
(CONTAINERS, COLD WEATHER TESTS), ARCTIC
REGIONS, SIMULATION, VISUAL INSPECTION,
ASSEMBLING, REACTION KINETICS, HANDLING, IMPACT
SHOCK, PERFORMANCE (ENGINEERING) (U)
IDENTIFIERS: AIRDROP PLATFORMS (U)

THIS ENVIRONMENTAL TEST PROCEDURE DESCRIBES
TEST METHODS AND TECHNIQUES FOR EVALUATING THE
PERFORMANCE AND CHARACTERISTICS OF AIRDROP
PLATFORMS UNDER ARCTIC WINTER ENVIRONMENTAL
CONDITIONS. EVALUATION IS RELATED TO CRITERIA
ESTABLISHED BY QUALITATIVE MATERIEL
REQUIREMENTS (QMR), SMALL DEVELOPMENT
REQUIREMENTS (SDR), TECHNICAL CHARACTERISTICS
(TC), AND OTHER DESIGN REQUIREMENTS OR
SPECIFICATIONS. (AUTHOR) (U)

VII. MISCELLANEOUS

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC4

AD-606 569

COON ELECTRIC CO MORTON GROVE ILL
STUDY AND EXPLORATORY FREE-FLIGHT INVESTIGATION OF
DEPLOYABLE AERODYNAMIC DECELERATORS OPERATING AT HIGH
ALTITUDES AND AT HIGH MACH NUMBERS, (U)
JUL 64 209P NICKEL, E.E. ISMS, L. H. :

PROJ: 6065

TASK: 606505

MONITOR: FDL ,

TDR#4 35 41

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: LEGIBILITY OF THIS DOCUMENT IS IN PART
UNSATISFACTORY. REPRODUCTION HAS BEEN MADE FROM BEST
AVAILABLE COPY.

DESCRIPTORS: (PARACHUTES, REENTRY VEHICLES), (REENTRY
VEHICLES, PARACHUTES), (PARACHUTE DESCENTS, SUPERSONIC
CHARACTERISTICS), PARACHUTE FABRICS, ATMOSPHERE ENTRY,
AERODYNAMIC HEATING, DECELERATION, HIGH ALTITUDE,
HEATRESISTANT MATERIALS, STAINLESS STEEL, TELEMETRY,
OSCILLATION, TEMPERATURE, REYNOLDS NUMBER, WIND TUNNEL
MODELS, HEAT TRANSFER COEFFICIENTS, FREE FLIGHT
TRAJECTORIES, STRESSES, ENVIRONMENTAL TESTS (U)

IDENTIFIERS: MACH NUMBER, CREE VEHICLE, NOMEX YARNS,
PERLON (U)

THIRTEEN PARACHUTE DECELERATOR TESTS WERE PERFORMED
AT THE GULF TEST RANGE OF THE AIR PROVING
GROUND CENTER AT EGLIN AIR FORCE BASE,
FLORIDA. THESE TESTS WERE ACCOMPLISHED THROUGH
THE USE OF MULTISTAGE ROCKET BOOSTERS. THE
CREE PAYLOAD VEHICLE WAS USED AS THE TEST PLATFORM
AND DATA GATHERING SYSTEM. THESE TESTS WERE
CONDUCTED USING BOTH HYPERFLO AND HEMISFLO
PARACHUTES WHICH WERE DEPLOYED AT PREDETERMINED
MACH NUMBER ALTITUDE REGIMES. TESTS WERE
ACCOMPLISHED OVER A MACH NUMBER RANGE OF 0.2 TO 4.4
AND AN ALTITUDE RANGE OF 45,000 TO 190,000 FEET.
THE DATA PRESENTED INCLUDES DRAG COEFFICIENTS
VERSUS MACH NUMBER, DYNAMIC PRESSURE, REYNOLDS
NUMBER AND VELOCITY, CANOPY ANGLES OF OSCILLATION,
CANOPY TEMPERATURES AND GENERAL DESIGN
CONSIDERATIONS. FROM THIS PARACHUTE DECELERATOR
TEST PROGRAM, IT MAY BE CONCLUDED THAT PERLON WESH
ROOF HYPERFLO PARACHUTES PERFORM SATISFACTORILY
THROUGH MACH 2.1, THAT NOMEX RIBBON HYPERFLO
PARACHUTES PERFORM SATISFACTORILY THROUGH MACH 4.0
AND THAT NOMEX HEMISFLO PARACHUTES PERFORM
SATISFACTORILY THROUGH MACH 3.4. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDNCA

AD-616 885

AEROSPACE CORP EL SEGUNDO CALIF

PERFORMANCE AND CHARACTERISTICS OF 67.2 FT EXTENDED
SKIRT CANOPY PARACHUTE WITH SINGLE CONICAL EXTENSION

(U)

APR 65 26P

EPFLEIN, HEINRICH K. :

REPT. NO. TDR-462(5110-01)-2

CONTRACT: AF04 695 469

MONITOR: ASD

TDR-65-42

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (PARACHUTES, AERIAL PICKUP SYSTEMS);
PERFORMANCE(ENGINEERING); CONICAL BODIES;
AERODYNAMIC CHARACTERISTICS; PAYLOAD; DROP
TESTING; RECOVERY; STABILITY; DRAG

(U)

THE DETAILS AND RESULTS OF TWO PARACHUTE DROP TESTS
MADE AT EL CENTRO, CALIFORNIA, ON 22 OCTOBER
1964, ARE DISCUSSED. THE PARACHUTES WERE A
MODIFICATION OF A BASIC DESIGN TO PERMIT THE AERIAL
RECOVERY OF PAYLOADS UP TO APPROXIMATELY 1500 POUNDS.
DISCUSSIONS AND CONCLUSIONS PERTAINING TO THE
DYNAMIC PERFORMANCE OF THESE MODIFIED PARACHUTES
DURING DESCENT AND THEIR PHYSICAL CONDITION AFTER
ENGAGEMENT WITH THE AIRCRAFT RETRIEVAL SYSTEM
HARDWARE ARE INCLUDED. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC4

AD-608 205 6/7 1/2
DEPUTY INSPECTOR GENERAL FOR INSPECTION AND SAFETY (AIR
FORCE) NORTON AFB CALIF LIFE SCIENCES DIV
TRENDS IN USAF AIRCREW ESCAPE. (U)
DESCRIPTIVE NOTE: REPT. FOR 1 JAN 60-30 JUN 64.
JUN 64 16P SHANNON, ROBERT H. SCHUM, I
SAMUEL P. DETRICK, WILLIAM R. I

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•AVIATION PERSONNEL, SURVIVAL), (•AIR
FORCE PERSONNEL, •ABANDONMENT), (•SURVIVAL, AIR
FORCE PERSONNEL), AIRCRAFT, JETTISONABLE COCKPITS,
AVIATION SAFETY, AVIATION ACCIDENTS, AIRCRAFT
FIRES, PARACHUTE JUMPING, EJECTION SEATS, REVIEWS,
BAILOUT, EJECTION (U)

THERE HAS BEEN VERY LITTLE CHANGE IN THE BASIC
EQUIPMENT AND METHOD OF UTILIZATION FOR ESCAPE FROM
INFLIGHT EMERGENCIES FROM THE INTRODUCTION OF THE
PARACHUTE DURING WORLD WAR I TO THE END OF
WORLD WAR II. ESCAPE FROM HIGH PERFORMANCE
AIRCRAFT, HOWEVER, REQUIRED THE USE OF AN EJECTION
SEAT TO INSURE CLEARANCE OF THE COCKPIT AND EXTERNAL
STRUCTURES. FOLLOWING WORLD WAR II EJECTION
SEATS WERE TESTED AND INSTALLED IN USAF AIRCRAFT
AND FIRST USED AS A MEANS OF ESCAPE IN 1949. THE
LARGEST SINGLE CAUSE OF ESCAPE FATALITIES REGARDLESS
OF METHOD OF SEPARATION FROM THE AIRCRAFT WAS VIOLENT
IMPACT WITH THE GROUND. INABILITY TO SURVIVE
PARACHUTE WATER LANDINGS WAS THE SECOND LEADING
CAUSE. THE MAJORITY OF MAJOR INJURIES REGARDLESS
OF METHOD OF ESCAPE OCCURRED DURING PARACHUTE
LANDING. THE MOST CRITICAL FACTOR IN DETERMINING
THE OUTCOME OF THE ESCAPE IS THE AMOUNT OF TIME
AVAILABLE FOR COMPLETION OF THE SEQUENCE. THIS IS
BORNE OUT BY THE HIGH FATALITY RATE IN ESCAPE
ATTEMPTS AT LOW ALTITUDES PARTICULARLY BELOW 500
FEET. WITH THE SEAT EJECTION SYSTEM, HOWEVER, MANY
SUCCESSFUL ATTEMPTS HAVE BEEN MADE AT LOW ALTITUDE
THAT WOULD NOT HAVE BEEN POSSIBLE WITH CONVENTIONAL
BAILOUT. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 720NC

AD-647 361

1971

1374

FRANKFORD ARSENAL PHILADELPHIA PA PROPELLANT ACTUATED
DEVICES QTV

FEASIBILITY STUDY OF A BALLISTIC HATCH RELEASE (XMS)

FOR THE HIGH SPEED AERIAL DELIVERY CONTAINER

(CONTAINER, AERIAL DELIVERY, CTU-1/A)

(U)

DESCRIPTIVE NOTE: MEMO, REPT.,

JA. 67

19P

TRAVOR, RUCCE

MONITOR: FA

M57-11-1

UNCLASSIFIED REPORT

DESCRIPTORS: (EXPLOSIVE ACTUATORS, HATCHES),
FEASIBILITY STUDIES, CONTAINERS, AIRBORNE, DELAY
ELEMENTS (EXPLOSIVE), PARACHUTE DESCENTS, RELEASE
MECHANISMS,

(U)

IDENTIFIERS: CTU-1/A CONTAINER

(U)

A STUDY WAS CONDUCTED TO DETERMINE THE FEASIBILITY
OF USING A MODIFIED M9 REEFING LINE CUTTER AS A
BALLISTIC HATCH RELEASE ON THE CTU-1/A HIGH SPEED
AERIAL DELIVERY CONTAINER (FORMERLY THE M5) TO
OBLVIATE THE POSSIBILITY OF A COLLISION BETWEEN THE
JETTISONED PARACHUTE HATCH AND THE AIRFRAME. THE
MODIFICATIONS REQUIRED WERE DETERMINED AND ASSOCIATED
NEW HARDWARE WAS DESIGNED AND FABRICATED. THE UNIT
WAS DESIGNATED RELEASE, CARTRIDGE ACTUATED,
XMS. THE MECHANICAL INTEGRITY OF THE BALLISTIC
HATCH RELEASE TO SUSTAIN AN INITIAL LOCK LOAD OF 500
LB WAS DETERMINED. A BALLISTIC CHARGE CAPABLE OF
PRODUCING A 500-LB THRUST OVER A 1-1/2 INCH STROKE
AND A 0.3-SEC DELAY ELEMENT CHARGE WERE ESTABLISHED.
THE NEW CARTRIDGE WAS DESIGNATED XM226.
VERIFICATION TESTING (PHASE I) AND TYPE I
CERTIFICATION TESTING AS ESTABLISHED BY THE NAVAL
WEAPONS LABORATORY (PHASE II) WERE
SATISFACTORILY ACCOMPLISHED. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZC-002

AD-654 430 1/3
TEXAS UNIV AUSTIN ELECTRICAL ENGINEERING RESEARCH
LAB
REFLECTING CHARACTERISTICS OF POGO PARACHUTE MODELS
D550, D553-6 AND P/N509-330. (U)
DESCRIPTIVE NOTE: TECHNICAL REVIEW,
JAN 60 29P BRITT, G. O. KRAUSE, L.
C. IBAHN, Jr. J. E.
REPT. NO. EERL-3-23
CONTRACT: NORD-16478
TASK: JTA-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH JAMES
HOPKINS UNIV., SILVER SPRING, MD., APPLIED
PHYSICS LAB., CF-2847.

DESCRIPTORS: (PARACHUTES, RADAR ECHO AREAS),
MODELS(SIMULATIONS), ROTATION, DATA, RADAR,
SCATTERING, TRANSMITTER-RECEIVERS, REFLECTION,
BALLOONS, SUSPENSION DEVICES, ANTENNAS,
FREQUENCY, MEASUREMENT (U)
IDENTIFIERS: POGO (U)

THE REPORT CONTAINS THE MEASURED RADAR SCATTERING
CROSS SECTIONS OF THREE MODEL POGO PARACHUTES,
DESIGNATED AS D 553-6, D 558 AND P/N 509-330.
OBSERVATIONS MADE WITH 1/6 SCALE MODELS WILL PERMIT
THE RESULTS TO BE SCALED FROM A MODELING FREQUENCY OF
35 KMCS TO A SIMULATED FREQUENCY OF 5.83 KMCS.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZUNC2

AD-663 912 22/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
THE ABC OF OUTER-SPACE PILOTING,
JUL 67 14P PERKULOV, I. ;
REPT. NO. FTU-HT-23-491-A7

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF
TEKHNKA MOLUDEZHI (USSR) NI P20-3 1966.

DESCRIPTORS: (*SPACECRAFT, USSR), SPACECRAFT
COMPONENTS, ASTRONAUTICS, GUIDANCE, STABILIZATION
SYSTEMS, LANDING GEAR, DECELERATION, SOFT
LANDINGS, DRAG PARACHUTES

(U)

SPACECRAFT GUIDANCE, CONTROL, STABILIZATION,
CORRECTION, DECELERATION, AND LANDING SYSTEMS ARE
DISCUSSED. IT IS NOTED THAT THE EXHAUST VELOCITY
OF A SPACECRAFT IS 2000 - 4000 M/SEC AND THAT A
PARACHUTE-LANDING ENGINE SYSTEM WAS EMPLOYED IN THE
SOFT LANDING OF THE 'VOSKHOD' SPACECRAFT. THE
ENGINE WAS SWITCHED ON WHEN THE SPACECRAFT WAS CLOSE
TO THE EARTH'S SURFACE SO THAT IT DECELERATED THE
DROP OF THE PARACHUTE REDUCING THE VELOCITY TO A
NEGLECTIBLE VALUE AT THE MOMENT OF LANDING.

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC4

AD-666 746 4/1 1976
MCGILL UNIV MONTREAL (QUEBEC) SPACE RESEARCH INST
AEROSPACE APPLICATION OF GUN LAUNCHED PROJECTILES AND
ROCKETS. (U)
FEB 68 46P MURPHY, CHARLES H. BULL,
GERALD V. I.
REPT. NO. SRI-R-24

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT THE
AMERICAN ASTRONAUTICAL SOCIETY SYMPOSIUM 'FUTURE
SPACE PROGRAMS AND IMPACT ON RANGE NETWORK
DEVELOPMENT,' N. MEX., MAR 1967. PAPER NO. 67-
38.

DESCRIPTORS: (*SABOT PROJECTILES, ATMOSPHERIC
SOUNDING), GUN LAUNCHED, SENSORS, TERRESTRIAL
MAGNETISM, TEMPERATURE, ELECTRONICS, DENSITY,
PAYLOAD, ACCURACY, SYMPOSIA, IONOSPHERE, WIND,
PARACHUTES, SOUNDING ROCKETS, ACCELERATION,
COSTS, MODIFICATION KITS (U)
IDENTIFIERS: *HIGH ALTITUDE RESEARCH PROGRAM,
HARP, GUN LAUNCHED PROJECTILES (U)

PROJECT HIGH ALTITUDE RESEARCH PROGRAM
(HARP) IS DIRECTED TOWARD THE USE OF GUNS FOR
SCIENTIFIC PROBING OF THE UPPER ATMOSPHERE. THE
ATTRACTIVE FEATURES OF GUNS FOR THIS PURPOSE ARE THE
BASIC ECONOMY OF SUCH A SYSTEM AND THE HIGH INHERENT
ACCURACY OF GUNS FOR PLACEMENT AT ALTITUDE AS WELL AS
ACCURACY IN GROUND IMPACT. THE BASIC LIABILITY FOR
SUCH AN APPROACH LIES IN THE VERY HIGH ACCELERATIONS
EXPERIENCED BY GUN-LAUNCHED PAYLOADS. THE GUNS
USED IN PROJECT HARP VARY IN SIZE FROM 5-INCH AND
7-INCH EXTENDED GUNS ON MOBILE MOUNTS TO
TRANSPORTABLE FIXED 16-INCH GUNS. ALTITUDE
PERFORMANCE VARIES FROM 20 POUND, 5-INCH PROJECTILES
REACHING 240,000 FEET TO 165-POUND, 16-INCH
PROJECTILES REACHING 590,000 FEET. SCIENTIFIC
RESULTS TO DATE ARE PRIMARILY WIND PROFILES MEASURED
BY RADAR CHAFF, ALUMINIZED BALLOONS AND PARACHUTES,
AND TRI-METHYL-ALUMINUM TRAILS, ALTHOUGH A NUMBER OF
SUCCESSFUL 250 MHZ AND 1750 MHZ TELEMETRY FLIGHTS
HAVE BEEN MADE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDNCA

AD-667 908 4/1

ATMOSPHERIC SCIENCES LAB WHITE SANDS MISSILE RANGE N
MEX

GUN LAUNCHED PROBES - PARACHUTE EXPULSION TESTS UNDER
SIMULATED ENVIRONMENT. (U)

FEB 68 31P WILLIAMSON, L. EDWIN ;

PROJ: DA-1T6-SU212-A-127

TASK: 1T6-SU212-A-127-03

MONITOR: ECOM 5179

UNCLASSIFIED REPORT

DESCRIPTORS: (*ATMOSPHERIC SOUNDING, SABOT
PROJECTILES), (*METEOROLOGICAL INSTRUMENTS, GUN
LAUNCHED), (*SABOT PROJECTILES, *PARACHUTES),
PACKS(PARACHUTE), HIGH-SPEED CAMERAS, PAYLOAD,
EJECTION, METEOROLOGICAL PARAMETERS, ENVIRONMENTAL
TESTS, SIMULATION, VACUUM, SPHERES, RELIABILITY,
RADIOSONDES, MATERIALS, DAMAGE, PHOTOGRAPHS,
NEW MEXICO (U)

IDENTIFIERS: GUN PROBE PROJECT (U)

EXPERIENCE GAINED DURING THE EARLY PHASES OF
PROJECT GUN PROBE AT WSMR REVEALED EVIDENCE
THAT THE PARACHUTE PACKAGING AND/OR EXPULSION
TECHNIQUES USED AT THAT TIME WERE UNSATISFACTORY.
TESTS WERE PLANNED TO EVALUATE THE TECHNIQUE
VISUALLY, UTILIZING HIGH-SPEED CAMERAS AND SIMULATED
ENVIRONMENTS. THE 60-FOOT VACUUM SPHERE AT THE
NASA FACILITY AT LANGLEY RESEARCH CENTER WAS
MADE AVAILABLE, AND SIX TESTS WERE SUCCESSFULLY
CONDUCTED. RESULTS OF THE TESTS INDICATED THAT
ONLY MINOR MODIFICATIONS TO THE EXISTING TECHNIQUE
WERE NECESSARY TO PRODUCE A COMPLETELY ACCEPTABLE
SYSTEM. (AUTHOR) (U)

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LDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-693 174 1971 173
WRIGHT AIR DEVELOPMENT CENTER WRIGHT-PATTERSON AFB
OHIO
NON-EXPENDABLE REEFING LINE CUTTER. (U)
DESCRIPTIVE NOTE: TECHNICAL NOTE,
AUG 54 29P LINGAINE, H. H. , JR.
REPT. NO. WADC-TN-4CLE-54-34

UNCLASSIFIED REPORT

DESCRIPTORS: (*PARACHUTES, CORDAGE), (*CORDAGE,
CUTTING), EXPLOSIVE ACTUATORS, NYLON, TENSILE
PROPERTIES, DROP TESTING, ENVIRONMENTAL TESTS (U)
IDENTIFIERS: REEFING LINES, *REEFING LINE
CUTTERS (J)

A REEFING LINE CUTTER WAS DEVELOPED FOR USE IN ALL
ENVIRONMENTS COMMONLY EXPERIENCED IN PARACHUTE DROP
CONDITIONS. THE REEFING LINE CUTTER AS TESTED CUTS
ANY NYLON LINE UP TO AND INCLUDING A 3,000 POUND
TENSILE STRENGTH; IT IS OPERABLE WITHOUT SPECIAL
TOOLS AND IT IS NON-EXPENDABLE. (AUTHOR) (J)

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LDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-695 066 1/3 14/2
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C
A PROJECTILE FOR TESTING PARACHUTE SYSTEMS WITH
REALISTIC MODELS (MANIKINS). (U)
SEP 69 7P
REPT. NO. FSTC-H7-23-387-69
PROJ: FSTC-0423100

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF PATENT (USSR) 199 689, 8
SEP 67.

DESCRIPTORS: (*PARACHUTES, TEST FACILITIES),
PROJECTILES, LOADING(MECHANICS), RELEASE
MECHANISMS, PNEUMATIC DEVICES, PATENTS, USSR (U)
IDENTIFIERS: PARACHUTE CANOPIES, TRANSLATIONS,
*PARACHUTE TEST PROJECTILES, *GAS CANNONS (U)

A PARACHUTE TEST PROJECTILE FOR GAS AND PNEUMATIC
CANNONS IS DESCRIBED. THE SYSTEM TO BE TESTED IS
FASTENED TO A FACE PLATE OUTSIDE THE BARREL OF THE
CANNON AND NEED NOT FIT WITHIN THE BARREL.
(AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD6695 360 1/3

ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
C

A DEVICE FOR CUTTING A PARACHUTE REEFING CORD, (U)

SEP 69 6P GANIN, V. P. MOROZOV, N.

F. IOPUKHOVSKI, L. E. I

REPT. NO. FSTC-HT-23-398-69

PROJ: FSTC-0423100

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF PATENT (USSR) 199 690, 8
SEP 67.

DESCRIPTORS: (*PARACHUTES, CORDAGE), (*CORDAGE,
CUTTING), PATENTS, ACTUATORS, USSR (U)

IDENTIFIERS: TRANSLATIONS, *REEFING CUTTERS (U)

A DEVICE FOR CUTTING THE REEFING CORD OF A
PARACHUTE, WHICH INCLUDES A TIME LAG MECHANISM AND
ACTUATING LEVER MECHANISM, SUPPLIED WITH A FLAT
CUTTER, IS DISTINGUISHED BY THE FACT THAT THE PURPOSE
OF INSURING DUSTPROTECTION OF THE TIME LAG MECHANISM,
THE CUTTER IS LOCATED IN A GROOVE WHICH IS SEPARATED
FROM THE INTERNAL CAVITY OF THE APPARATUS BY THE
CHASSIS WALL, ON WHICH THE AXIS OF ROTATION OF THE
CUTTER IS MOUNTED. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDNC2

AJ-699 080 173 13/12
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D
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AN AUTOMATIC DEVICE FOR PARACHUTE RESCUE SYSTEM, (U)

NOV 69 8P INTERGOV, I. L. KRUKOV, V.
V. KRASLEGAEV, L. IGOROV, A. V. I
REPT. NO. FSTC-MT-23-403-69
PROJ: FSTC-D4231002301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF PATENT (USSR) 132
957.

DESCRIPTORS: (*ESCAPE SYSTEMS (AEROSPACE),
EJECTION SEATS), (*PARACHUTES, RELEASE
MECHANISMS), CATAPULTS, TIMING DEVICES,
SERVO MECHANISMS, REACTION KINETICS, PATENTS
IDENTIFIERS: TRANSLATIONS (U)
(U)

THE REPORT DESCRIBES A DEVICE FOR AUTOMATICALLY
ACTIVATING A PARACHUTE RESCUE SYSTEM DURING
CATAPULTING, WHICH INCLUDES ACTUATING POWER,
MEMBRANE-BLOCKING AND WATCH MECHANISMS. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONC2

AD-702 752 1/3 1971

NAVAL AMMUNITION DEPOT CRANE IND
MK 45 AIRCRAFT PARACHUTE FLARE OPTIMIZATION
PROGRAM PRELIMINARY EVALUATION OF EXPERIMENTAL
PARACHUTES AND PARACHUTE MATERIALS FLIGHT TEST
SERIES NO. 1.

(U)

NOV 69 26P KOCH, CLENNETH R. ;
REPT. NO. NAD-CR-RDTR-163

UNCLASSIFIED REPORT

DESCRIPTORS: (•PARACHUTE FLARES, PARACHUTES),
(•PARACHUTE FABRICS, RELIABILITY), FLIGHT
TESTING, PARACHUTE DESCENTS, OSCILLATION,
CONFIGURATION, STABILITY, OPTIMIZATION, BURNING
RATE

(U)

IDENTIFIERS: MARK-45 FLARES

(U)

THIS REPORT DEPICTS THE RESULTS OF MK 45
AIRCRAFT PARACHUTE FLARE FLIGHT TESTS
(EXPERIMENTAL PARACHUTES) CONDUCTED AT NAVAL
WEAPONS CENTER, CHINA LAKE, CALIFORNIA, ON
26 JUNE 1969 THROUGH 7 OCTOBER 1969. THIS WORK
WAS PERFORMED AS AUTHORIZED BY AIRTASK NO. A05-
532-057/323-1/44703-03. DATA OBTAINED FROM THESE
FLIGHT TESTS INDICATE THE CROSS TYPE PARACHUTE
POSSESSES THE MOST ADVANTAGEOUS CHARACTERISTICS FOR
INCORPORATION INTO MK 45 AIRCRAFT PARACHUTE
FLARE. (AUTHOR)

(U)

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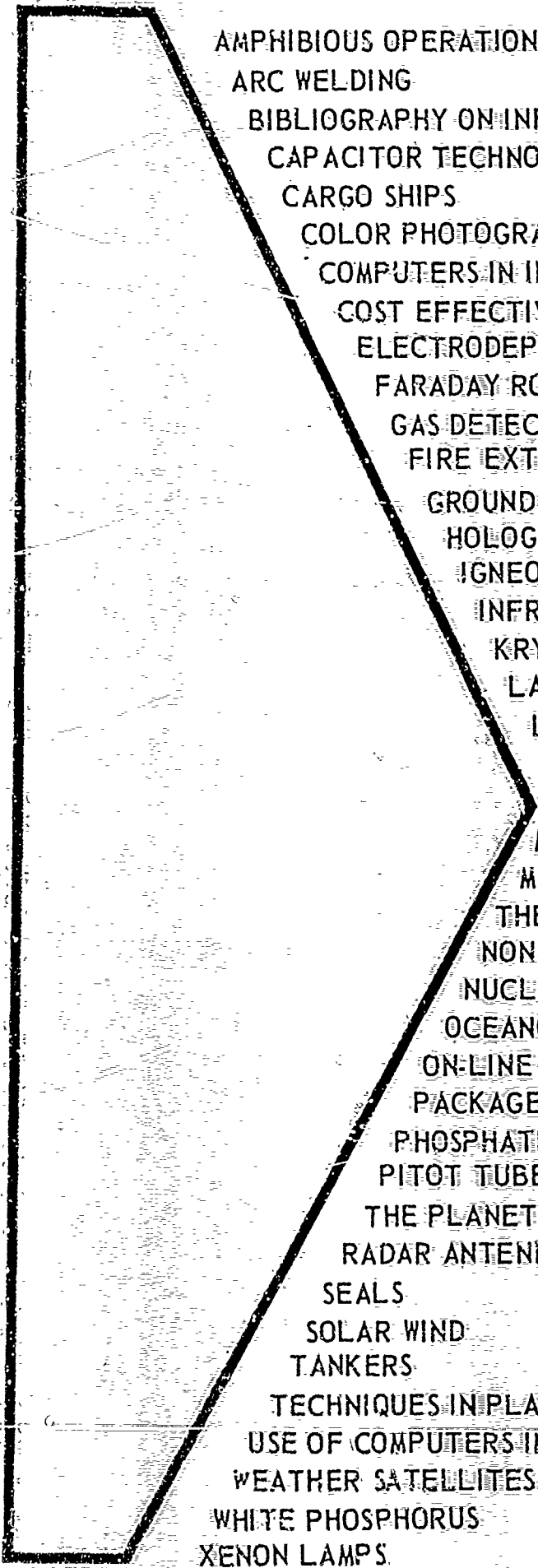
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